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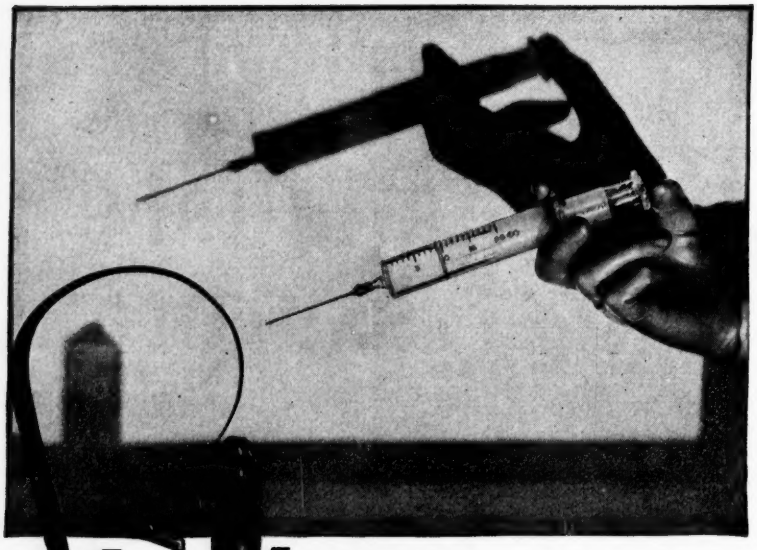

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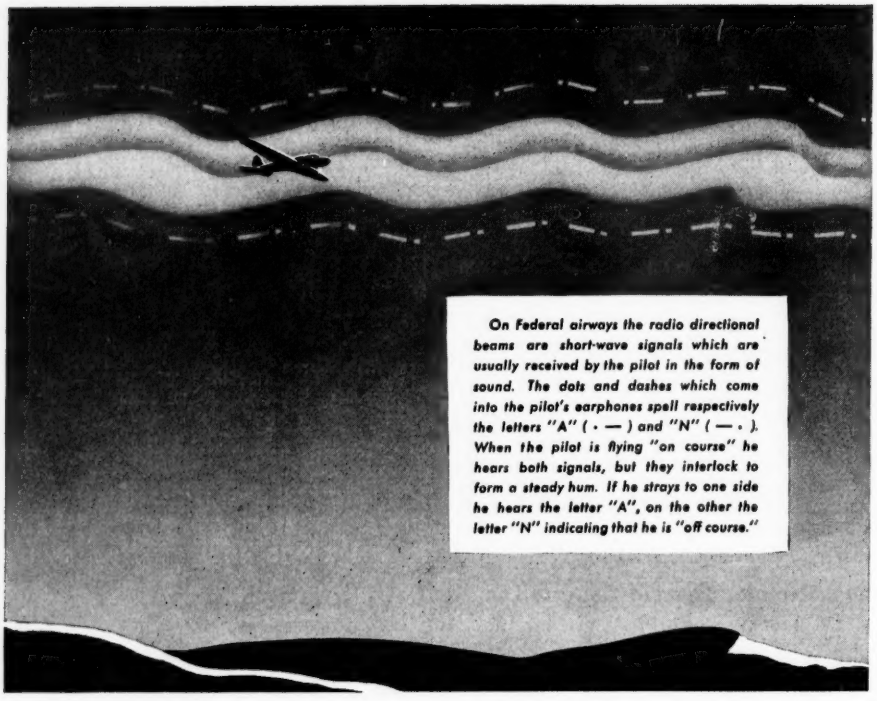

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ANESTHESIA IN THE UNITED STATES NAVAL SERVICE*

REAR ADMIRAL ROSS T. McINTIRE, M.D., F.A.C.S., F.I.C.S.,
MEDICAL CORPS, UNITED STATES NAVY

Surgeon General of the United States Navy

WASHINGTON, D. C.

THE Naval Medical Service is naturally keenly interested in finding a proper form of anesthesia which will meet all the peculiar needs of that service. It is an established fact that naval surgery is seldom extensive at the scene of action. In fact, in all naval engagements there is little opportunity to do more than give first aid to the wounded. When the engagement lessens, the wounded are collected and moved to the battle dressing stations, where operative procedures may be carried out. Analgesic agents are freely administered in this phase of activity. As is well known, there is no more efficacious drug than morphine or some of its derivatives. Anesthesia then is delayed until operative measures can be instituted and performed in the safety of the operating room or dressing station.

The medical division of a ship must be prepared to render all possible aid to the wounded. It must be prepared in all the practical procedures of induction anesthesia and analgesia, so that life-saving operations may be speedily managed and shock-producing wounds may be quickly and mercifully handled. There is no greater stimulus to fighting morale than the reassuring knowledge that quick and efficient analgesic agents are available for the control of pain. The fighting courage of brave men will weaken and finally be exhausted by the unbridled strength of pain. The sight of shipmates stricken and in agony from wounds will destroy the morale of any gun crew.

In the preceding paragraph I have discussed the problems met in battle conditions. We have, of course, in our naval hospitals the same problems in anesthesia that confront any civilian institution. Consequently, our anesthesia needs are similar and need no further comment.

The second class of anesthesia service takes in the ship on detached duty in peacetime. Here is a distinct and separate problem, one where the ship's surgeon may find himself in the position of anesthetist. Therefore we must find a comfortable and efficient anesthesia, which will approach as near as possible one hundred per cent safety.

In the following paragraphs I shall discuss briefly the advantages and disadvantages of various agents and shall attempt to draw a conclusion as to which of these best meets our need.

ANESTHETIC AGENTS

All surgeons are familiar with the general acclaim over the great conquest of surgical pain when ether and chloroform vied with each other for first place in popularity. In those early days little attention was paid to the morbidity or deaths due to anesthesia. Chloroform, pleasant and quick in action, was a great European favorite and at one time bade fair to replace ether in America. However, when close attention was given to mortality from anesthesia, ether gained a rapid ascendency, and chloroform lost greatly in favor, especially when it was proved that there was a great deal of secondary visceral damage, particularly to

* Read at the International Scientific Assembly of the International College of Surgeons, New York, May 22, 1939.

the heart and liver. Ether was proved to be much safer. Pulmonary and gastric irritation were the only primary insults traceable to this drug, which was found to cause little or no serious secondary damage, even after prolonged anesthesia.

Nitrous oxide has been in use throughout the same period as ether, but it was not employed in major operations until 1868. Since it has been combined with oxygen, it has proved a relatively safe and satisfactory anesthetic, and in the Naval Service it has been used to a great extent. It has a definite place in induction anesthesia, and when combined with local anesthesia gives one of the most useful anesthetics we now have.

Many other gases have been given thorough trial, such as: ethylene, divinyl ether, cyclopropane, avertin and the soluble barbiturates. All these have a useful place in the field of anesthesia, but have objectionable features that have made them of little use in naval surgery.

The greatest disadvantage in the use of ethylene is its inflammable and explosive nature. Its advantage over ether is that it is more rapid in action and less unpleasant to the patient, causes no irritation to the lungs and little postoperative nausea and vomiting. Another disadvantage is that it will not produce as complete muscular relaxation as ether, and for efficient surgical procedure it is often necessary to supplement ethylene with ether.

Divinyl ether is highly inflammable and also explosive and is considered too unsafe for shipboard use.

Cyclopropane has the same disadvantage as divinyl ether in that it is also inflammable and is capable of exploding when ignited in a mixture of oxygen as low as 3.8 per cent. It has a splendid reputation as a pleasant induction method and is supposed to afford greater surgical relaxation.

Avertin combined with amylene hydrate is employed as a basal anesthetic, to be supplemented by some general or local anesthetic. Given slowly as an enema in a patient's bedroom, twenty minutes before operation, it produces sleeplike unconsciousness rapidly and quickly. There is no excitement, and the preoperative apprehension is quickly dispelled. Contraindications are severe organic lesions or dysfunction of the liver or kidneys, severe cardiac disease, enteritis, ileus, tumors of the colon, lesions of the rectum, sepsis, shock and grave cachexia.

Intravenous anesthesia has been given a great deal of space in the public press, as well as in professional channels, during the past few years. The soluble barbiturates have been found to be useful in this field when short operative procedures are indicated. However, one must realize clearly that when given by intravenous injections they must be classified as noncontrollable anesthetic agents because of their nonvolatile character. They are, however, rapidly detoxicated and approach in a sense the controllable type of anesthetic agent. This is especially true when they are injected slowly by the fractional dosage method. The most popular are pentothal sodium, evipal soluble, sodium amytal and pentobarbital sodium. They should be injected intermittently and slowly, usually at the rate of 1 cc. per ten seconds until unconsciousness occurs. The average dosage is 3 cc. in thirty seconds. The injection is then stopped for thirty seconds, after which the remainder of the required dose is given intermittently. The duration of anesthesia averages from fifteen to twenty minutes. The contraindications are organic disease of the liver, inflammatory processes of the throat, sepsis and definite hypotension. Intravenous anesthesia is rapid and pleasant, with natural sleeplike unconsciousness.

A new agent has come into the field

of anesthesia. The use of helium gas combined with nitrous oxide and oxygen is being given a thorough investigation and seems to have a definite place in cases in which there are difficult or obstructive respiratory conditions. It is well known that helium has a place in the therapy of bronchial asthma. Helium is an inert and extremely light gas which diffuses rapidly through the bronchioles and alveoli and allows a higher oxygen concentration in the tissues.

The field of spinal and local anesthesia will now be considered. On shipboard these two methods are especially adaptable. The surgeon anesthetist must be thoroughly trained in regional anesthesia, which includes all lesions of the head, neck, body and extremities. Complete field block of the scalp can be accomplished to take in all superficial wounds of the scalp, and craniotomy can also be performed by this method. The pericranium and periosteum are not injected, as the bones of the skull are insensitive and may be drilled, sawed or cut without painful sensation. The paths of all regional nerves of the head can be blocked. Wounds of the face and neck are easily blocked by similar methods across the paths of the regional nerves. Practically all surgical intervention on the thorax can be accomplished by the combination of paravertebral and intercostal block and subdermal infiltration. The lungs and heart are not sensitive, and the parietal pleura and pericardium, though sensitive to traction, may be blocked by direct infiltration of the exposed pleura or pericardium around the operative zone.

For major wounds below the diaphragm, spinal anesthesia is satisfactory when shock and hemorrhage are not serious factors. Combination of abdominal field block and low light spinal analgesia will permit full abdominal exploration. Supported by concurrent intravenous infusion of dextrose, sodium chloride or blood, this procedure is very safe. Penetrating and major upper abdominal wounds may require supplemental inhalation anesthesia, with regional block of the portion of the upper abdomen. Abdominal field block combined with anterior splanchnic anesthesia, by direct subperitoneal infiltration made along the paths of regional sympathetic nerves, will give adequate surgical anesthesia, with remarkable relaxation and quietness of the abdomen and the greatest safety.

For all types of fractures and dislocations, local anesthesia is adaptable, extremely satisfactory, and safe in all devices. It is attained with surprising ease by regional blocking of sympathetic nerves and intramuscular injection of procaine into the bellies of the involved muscles. The "fracture hematoma" at the site of fracture is not entered. Analgesia and muscular relaxation are obtained within five to ten minutes and persist for two or four hours after reduction. For major fractures and dislocations of the upper extremity, brachial anesthesia is excellent for close and open reductions. Low spinal anesthesia is the method of choice for fractures and dislocations of the pelvis or femur and major tibial fractures.

Cases of traumatic wounds involving severed tendons and nerves are excellent cases for the use of local anesthesia. Identification of tendons, nerves and important structures is made easier with this method, and the extent of functional recovery may be directly noted.

For all the purposes just stated, local infiltration and injections of a 0.5 per cent solution of procaine combined with epinephrine are employed.

In spinal anesthesia, procaine, never exceeding 1 mg. for each pound of body weight, is used, and should metycaine be the drug, 10 to 25 per cent should be deducted from the dose of procaine.

SUMMARY AND CONCLUSIONS

A summary of the factors that influence the choice of anesthesia and analgesia in major naval engagements are:

1. During active engagements the number of wounded men which makes rapid turnover imperative.
2. The grouping of casualties as to type of wounds. Cases of critical shock and severe hemorrhage, burns, fractures, mutilating wounds due to high explosives, all of which come to major surgery.
3. That large group of cases demanding prompt attention so that the men may return promptly to their battle stations.
4. Early recovery from anesthesia which will limit nursing care.
5. Many patients may face immediate transfer from one ship to another at sea.
6. The availability of inhalation and anesthetic machines and trained personnel to manage them.
7. Efficient, simple, and lightest anesthetic equipment possible, which can be made immediately available.

When one considers the needs that will best meet battle conditions, two anesthetics stand out: procaine for all local measures, and chloroform as the choice in inhalation anesthesia.

A word should be said here as to the use of soluble barbiturates as analgesics. Using fractional doses of these drugs during actual battle conditions would go far to relieve the acute symptoms of the wounded men, and would facilitate greatly their transportation to the dressing stations during the lull in action.

The choice of anesthetic for our ships on independent duty during peacetime is procaine. On battleships or cruisers, nitrous oxide combined with oxygen is very useful, but on smaller units is not available.

I recommend the use of analgesics, combined with local and spinal anesthesia, as the method of choice in naval surgery.

DISCUSSION

DR. D. G. SUTTON, Captain, United States Navy: I should like to add that the general custom on ships of our navy, so far as anesthesia is concerned (with exclusion of the hospital ship), is to use spinal anesthesia, procaine, where possible, supplementing ether. On our smaller cruisers, our destroyer outfits, where we have limited personnel and equipment, the anesthetic is left to the discretion of the immediate physician. Every facility is given, and in most instances our personnel is trained to handle the spinal anesthesia and ether.

RÉSUMÉ

L'anesthésie dans le service naval des Etats-Unis

En temps de guerre, la procaïne est l'anesthésique de choix pour la petite chirurgie, le chloroforme pour la grande chirurgie. Le monoxide d'azote combiné avec l'oxygène est très utile, mais il est difficile de l'obténir sur les petites unites navales. L'analgésie renforcée par l'anesthésie locale ou rachidienne est recommandée comme une méthode de choix dans la chirurgie navale.

ZUSAMMENFASSUNG

Anaesthesie in der Marine der Vereinigten Staaten

Das bevorzugte Anaestheticum für Schiffe in Kriegszeit ist Procain für lokale Eingriffe und Chloroform für Inhalationsanaesthesie. Im Frieden ist das bevorzugte Mittel Procain. Auf Schlachtschiffen und Kreuzern ist eine Lachgas-Sauerstoffmischung sehr nützlich, kann jedoch auf kleineren Einheiten nicht angewandt werden. Die Anwendung von lokaler und spinaler Anaesthesie zusammen mit einem schmerzlindernden Mittel wird als bevorzugte Methode in der Schiffschirurgie empfohlen.

SUMARIO

La anestésia en el servicio naval de los Estados Unidos

El anestésico selecto para los barcos durante tiempo de guerra es procaína para las anestésias locales y cloroformo para las anestésias por inhalación. Durante el tiempo de paz la selección es procaína. En los acorazados ó cruceros, anhidrido nitróso combinado con oxígeno es muy usado; pero no es recomendado en barcos mas pequeños. El uso de analgésia, combinada con local y anestésia spinal, es recomendada como el metodo á escoger en cirugía naval.

RIASSUNTO

Anestesia nel servizio navale degli Stati Uniti

L'anestetico di scelta per navi in tempo di guerra è procaina per anestesia locale e cloroform per anestesia d'inhalazione. In tempo di pace l'anestetico di scelta è procaina. On navi di battaglia ed incrociatorin N_2O combinato con ossigeno è molto utile ma non applicabile nelle navi di minore volume. L'uso di analgesici combinato con anestesia locale o spinale è raccomandato come metodo di scelta nella chirurgia navale.

NATIONAL ASSEMBLY

THE NATIONAL ASSEMBLY OF THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS WILL BE HELD ON FEB. 12 AND 13, 1940, AT VENICE, FLORIDA, UNDER THE DIRECTION OF DR. FRED H. ALBEE, INTERNATIONAL PRESIDENT-ELECT, AND THE PRESIDENCY OF DR. FREDERICK M. DOUGLASS, PRESIDENT OF THE UNITED STATES CHAPTER AND CHAIRMAN OF THE PROGRAM COMMITTEE.

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MEXICO CITY, MEXICO, AND WASHINGTON, D. C.

AMONG the very few surgeons who practiced gallbladder surgery in Mexico thirty years ago were Dr. Ulises Valdés, who died last year, and Dr. Gabriel M. Malda. I had the privilege of acting as assistant to both during my last years as a student, and in this capacity I helped in numerous operations on the biliary tract. After graduating, I performed a number of cholecystostomies and cholecystectomies between 1917 and 1927, and also aided the aforementioned professors in about a hundred such operations. Later, during my visits to Mexico City in 1932, 1935 and 1936, and in the past three months of this year (1939), I have observed, when not aiding, Professor Malda performing new operations, and we have often exchanged ideas on the subject of this paper.

Since we first became interested in biliary surgery, Dr. Malda and I have continued to study this subject, as our attention, as well as that of other surgeons, has been attracted by the presence, in gallbladders operated upon, of a clear fluid resembling rock-filtered water. While this appearance prevails in the majority of cases, in others the fluid is lightly turbid and viscous, and in rare instances it has a greenish color, similar to that of bile.

The investigations made in Dr. Malda's sanatorium at different times, under his direction, confirm those of the authorities cited in this paper, and bear out the views expressed further on.

COMPOSITION

The fluid mentioned, known as "white bile," exists when *an intrinsic or extrinsic object blocks the bile ducts.*

It was first thought that the storing up of bile in the biliary ducts brought about the secretion of this white bile by stimulating the epithelium. The prominent French surgeon Terrier denied such a possibility, pointing out that true secretions are originated by the activity of specialized epithelia. Chemical processes endow these secretions with a constitution very different from that of blood; in the former are present specific products which cannot be found in the latter. The mineral elements are in different proportions in a secretion than in the blood, owing to the fact that glandular action changes the respective relations of ions.

Various products of similar mineral composition are derived from the blood by purely physical mechanisms (such as exudate and transudate), as proved by the amount of chlorides and by the total ash content. These "serates" or serous fluids are characterized by a consistent amount of the chlorine anion, which is analogous, when not equal, to that of the blood.

Biliary stasis causes an interchange with the blood through the normal or damaged epithelia of the gallbladder and through the desquamated and already fibrous walls of the ducts. This dialytic phenomenon culminates in the transformation of the bladder contents, the bile being replaced by a balanced blood dialysate.

The blood, through the various mechanisms mentioned, may form serates, balanced dialysates and true secretions. Chemical examination shows that

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the "typical white bile" is a well balanced dialysate, conforming in its general composition and mineral characteristics to natural balanced dialysates and products obtained by dialysis of the plasma through membranes (goldbeaters' skin, collodion bags, etc.).

Although the dialytic composition is identical, these fluids may present various aspects: Persistent epithelial islands may produce a mucus which clouds and thickens the retained liquid; or when some communication with the liver is maintained, the biliary pigment stains the dialysate, giving it a greenish color.

As a result, three types may be distinguished: first, pure well balanced dialysates from the biliary ducts, which furnish the typical or pure white bile; second, well balanced dialysates contaminated with mucin of epithelial origin (white bile contaminated with mucus cells), and, third, stained well balanced dialysates (pseudobiliary fluids).

Clinical, histologic and chemical data are in agreement with this classification. Clinical experience shows that in patients operated upon there has always been found a complete mechanical obstruction to the passage of bile. The gallbladder has invariably proved in such cases to be dilated, wrinkled, leathery or dried.

Tissue examination, in turn, offers corroboratory data: In the purest types of white bile the lining of the gallbladder is completely lacking or only a few islands are left; the cells are of the pavement type; the submucosa and the subserous tissue become fattened and necrosed, transforming the gallbladder into a fibrous sac comparable to a collodion bag. In each case a careful investigation shows an acute, subacute or chronic inflammatory process, whether past or present. On centrifugation white bile gives in some cases a precipitate consisting of polynuclear cells. In other instances a fibrinous exudate covers the gallbladder. The presence of a leukocytic congestion and infiltration attests the inflammatory nature of the disease process in other cases.

Chemical findings also bear out the classification just given. In the pure types, the puncture fluid is clear or slightly opalescent, rarely clouded by suspended elements; its consistency is fluid, not threadlike; the specific gravity varies between 1.006 and 1.007; albumin and mucin are absent. All this agrees with the nonexistence of an open inflammatory process and with the complete, or almost complete, disappearance of the lining of the sites in question. Mineral substances recovered from ash reach a proportion of 8.50 as in the blood and humors from which they are derived. The chlorides, calculated as sodium chloride, are between 7.4 and 8 mg. per thousand cubic centimeters. The characteristic constituents of the biliary secretion (cholesterol, pigments and salts) are lacking, or only traces of them are found; the urea follows the curve of the blood urea value. Sugar is present in amounts varying from 0.8 to 0.12 mg. per liter.

In the second type the dialysate structure is not lost, but the fluid contains protein and mucin: 1 Gm. of the former and variable amounts of the latter. Biliary elements are lacking or very scarce. Chlorides are decreased, owing to the action of the colloids, according to the laws governing natural dialysates or because of the existence of a mild inflammatory process.

Greenish fluids have a different composition; they are always dialysates mixed with bile, and are called "pseudobile." The mineral elements, fixed elements, chlorides and specific gravity recall in their proportions the corresponding blood values.

Although the composition of the various types of white bile is known, its origin remains to be explained. While there is no generally accepted explana-

tion, opinions may be advanced which will approximate the truth.

ORIGIN

The first experiments were made by Mocquot on dogs and guinea-pigs; Quénu experimented on man, Aschoff and Bacmeister on dogs, Yohida on cats and guinea-pigs, Petrescu on two dogs. All these workers produced by ligation of the cystic duct the drying up of the gallbladder with thickened bile, but without white bile formation.

Then came the experimental work of Peyton Rous and MacMaster. Operating on dogs, they isolated, between two ligatures, a portion of the common duct, and observed in twelve days distention of the ligated part and the presence in it of a colorless, mucilaginous fluid having every appearance of white bile. This sterile fluid contained neither biliary salts nor pigments. A small globe connected with the isolated fragment and included with it in the abdominal cavity permitted collection of the fluid for microscopic analysis. Its constitution was then determined and proved similar to that of white bile. Gosset and W. Mestrezat repeated these experiments in association with Loewy and Mlle. M. Janet and reached the same conclusions.

MacMaster and Peyton Rous, while studying obstructive jaundice in dogs, observed that after some time the blocked ducts filled with a fluid free from pigment and biliary salts, that is to say, with white bile. In the opinion of these workers, this colorless fluid was secreted by the membrane lining the ducts; that is, they *accepted it as a secretion* and, furthermore, as a normal secretion of the bile ducts. They believed that this fluid replaces the bile secreted by the liver cells when the normal secretion is no longer discharged into the ducts.

Such theories do not agree with developments in the gallbladder on which opinion is unanimous. Ligation of the cystic duct does not produce white bile. Is this due to inability of the epithelium to secrete it according to MacMaster's and Peyton Rous' ideas? The answer must be in the negative, since neither the gallbladder nor the duct lining has this property. White bile, in the most authentic cases, exhibits a chemical composition failing by far to conform to the characteristics of a specific cellular secretion derived from any glandular activity whatsoever. Peyton Rous' white bile from the common duct is identical with the white bile yielded by a gallbladder already considerably damaged and reduced to a fibrous wall still provided with capillary vessels.

It may be assumed that the appearance or nonappearance of white bile is caused by certain anatomic or physiologic conditions of the biliary system—conditions which should be looked for in order to solve the problem.

No one discusses the concentration, mucus secretion and bile storage functions carried on by the gallbladder. It is known that gallbladder bile may be ten times as concentrated as that taken directly from the hepatic duct. Water and inorganic salts are absorbed by the bladder walls and passed on to the lympathic ducts and the blood vessels. The absorbed fluid becomes similar in composition to normal saline solution because, in ordinary conditions, only small quantities of biliary pigments, biliary salts and cholesterol are absorbed. It is still open to discussion whether cholesterol is produced by the gallbladder mucosa. This theory is given support by those gallbladders the connective tissue of which is impregnated with the aforementioned lipoid, cholesterol, exhibiting the disturbance called "cholesterosis of the gallbladder," or, when the stress is laid on the appearance of the mucosa, "strawberry gallbladder." In spite of this cholesterol-fat impregnation, no conclusion may be

drawn as to whether the mucosa of the gallbladder produces the secretion.

Hammarsten's patient work and, as already mentioned, also that of Peyton Rous and MacMaster, must be credited with the details of the present physiopathological knowledge of the gallbladder. One has learned about its absorbent power, demonstrated through the comparative study of the bile collected in the hepatic duct as it emerges from the liver, and that removed from the gallbladder itself. One now realizes its extremely rapid absorptive power in some cases. In one experiment, 50 cc. of bile entered the gallbladder and was reduced to less than 5 cc. in twenty-two hours. Through its mere passage through the organ the bile becomes concentrated. In one experiment, consisting of placing a cannula in the base of the organ, the bile recovered was five times smaller in volume. Inflammation reduces or impedes absorption. The mucous membrane, through its secretion of mucin, cooperates in the thickening process of the bile. Nothing like this happens in the ducts, where this material is not produced; on the contrary, their fluid secretion thins out the bile and makes it less viscous.

When a ligature is applied to the main duct and the gallbladder is excluded, a colorless fluid appears a few days later in the ducts. This is the white bile. It contains no bile pigments or salts or cholesterol, and hardly resembles bile at all. The bile secretion has been stopped by the considerable increase in pressure (300 mm. of water) within the duct system.

If the gallbladder is healthy and is not shut out, the results are completely different. The retained bile is transformed into a very thick, dark green product, which gathers in the bladder and ducts and after a few weeks assumes a tarlike consistency through the action of the biliary system. In this case there are antagonistic functions, if one wishes to put it so, as the ducts tend to render the bile more fluid and the bladder tends to thicken it. This conflict terminates with the triumph of the ducts over the bladder, the final product having but slight density.

Another type of white bile produced by a different mechanism has been mentioned. When the liver cells of a dog are injured by chloroform poisoning, a colorless, clear fluid is discharged by the cells, the true secretion being suppressed. White bile of this type may occur in man as a sequel of hepatic disease. The conclusion derived from these facts is that the gallbladder cannot retain any fluid without absorbing it. Neither can it produce white bile while it remains healthy and retains its physiologic function.

If the epithelium is injured, damaged or totally or partially destroyed, the situation changes completely. White bile from the common duct and that from the gallbladder are alike, but neither represents epithelial secretion. Injury to or disappearance of the gallbladder lining favors white bile formation. An epithelium may be injured, damaged or destroyed by physical, chemical or biologic agents, and, among the last, infection is the most prominent. Two of MacMaster's dogs, prepared through ligation of the common duct to furnish green bile, gave white bile, but in both animals infection was present. Mocquot considered empyema of the gallbladder as essential to white bile formation. Aschoff and Bacmeister have asserted that gallbladder dropsy is preceded by an inflammatory condition. Kummel reached the same conclusion, and Gosset and Mestrezat have agreed in this. The almost complete absence of sugar, the decrease of bile urea in relation to blood urea, and the weak alkalinity of these fluids are chemical reasons carrying considerable weight in forcing acceptance of the presence of an infection or changes on the part of

epithelium in contact with the fluid. Kausch, Steiner, Berg and Sprengel believe that simple stasis is all that is needed to yield white bile.

I do not feel that there is any real antagonism among these conclusions, although apparently contradictory. "Anything which becomes stationary or stagnant points to death." When the intestinal contents cease moving, the lining becomes injured and loses its functions. It is likewise when urine is retained in a ureter. When blood clogs a vein, the vascular endothelium undergoes a number of changes. Similar examples may be quoted *ad libitum*. Why should not the gallbladder and its ducts undergo a similar pathologic change which may destroy their normal functions?

Conclusions. White bile does not derive from the gall secreted by the liver; it is a well balanced blood dialysate. Its production is a result of biliary stasis, at the level of the ducts, and coming to the gallbladder, of the disappearance of its epithelium or changes in its operation.

PRACTICAL APPLICATIONS

Outside of the satisfaction of arriving at a scientific truth, the views advanced in this paper led to certain practical applications. If, in the course of a surgical operation white bile is found, even though the gallbladder appears healthy or but slightly inflamed, it is best to remove this organ. The presence of this dialysate suggests occurrence of a more or less advanced infection and epithelial damage or destruction. It is useless and even dangerous to preserve a damaged organ. The patient may recover from the operation, but he will almost unavoidably suffer disturbances which will not disappear with diet or medication, even if prolonged.

I have performed two cholecystectomies, years after having drained gallbladders which at microscopic examination appeared healthy. In each case the cause lay in obstructions from extrinsic causes: adhesions to the duodenum and an enormous ovarian cyst. In one case stones developed; in the other, malignant degeneration.

If white bile is a definite sign (as Malda and I believe) of more or less advanced infection and damage of the gallbladder lining, the best judgment in such cases must favor removal of the organ instead of exposing the patient to chronic disturbances or a further operation under less favorable conditions in the future.

SUMMARY

When the bile ducts are obstructed, a fluid is observed at operation varying from clear to slightly turbid and viscous, and greenish in some cases. This is a well balanced blood dialysate. Theories as to its origin are discussed. In such cases an acute, subacute or chronic inflammatory process is present, and removal of the gallbladder is indicated.

RÉSUMÉ

La bile blanche

Quand les conduits biliaires sont obstrués, on trouve à la table d'opération un liquide limpide ou turbide et visqueux ou verdâtre. C'est un dialysat sanguin bien equilibré. L'auteur discute les différentes théories qui ont été avancées sur l'origine de ce liquide. Dan ces cas il y a toujours un état inflammatoire aigu, sous-aigu ou chronique. L'ablation de la vésicule biliare est indiquée.

ZUSAMMENFASSUNG

Weisse Galle

Wenn die Gallenausführungsgänge verstopft sind, sieht man während der Operation eine leicht getrübte und viscöse Flüssigkeit, von grünlicher Farbe, die manchmal auch klar sein kann und ein Blutdialysat ist. Theo-

rien über ihren Ursprung werden besprochen. In diesen Fällen ist ein akuter, subakuter oder chronischer Entzündungsprozess im Gange und eine Entfernung der Gallenblase ist angezeigt.

SUMARIO

Bilis blanca

Cuando los conductos biliares estan obstruidos, un flúido es observado en la operación variando de claro á ligeramente turbio y viscoso, y verdoso en algunos casos. Esto es una díalisis sanguínea bien balanciada. Teorias con respecto á su origen se estan discutiendo. En tales casos un proceso agudo, subagudo ó crónico inflamatorio está presente, y extirpación de la vesícula biliar está indicada.

RIASSUNTO

Bile bianca

Se i condotti bileari sono otturati, all'operazione si può osservare un liquido che varia da chiaro a leggermente torbido e viscoso e verdastro in alcuni casi. Questo è un dialisato del sangue che è bene bilanciato. Teorie sulla sua origine sono indagate. In questi casi un processo infiammatorio acuto, subacuto o cronico è presente ed ablazione della cisti fellea è indicata.

APPLICATIONS FOR ASSOCIATE MEMBERSHIP, MEMBERSHIP AND FELLOWSHIP IN THE INTERNATIONAL COLLEGE OF SURGEONS MAY BE ADDRESSED TO DR. CHARLES H. ARNOLD, 908 TERMINAL BUILDING, LINCOLN, NEBRASKA. THESE WILL BE ACTED UPON IN THE REGULAR ROUTINE AS OUTLINED IN THE BY-LAWS. APPLICATIONS FOR CONSIDERATION MUST BE RECEIVED NOT LATER THAN A MONTH PRECEDING THE REGULARLY STATED ASSEMBLY MEETING.

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SARCOMA VERSUS STROMATOUS ENDOMETRIOSIS OF THE UTERUS*

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OF sixteen cases with a diagnosis of sarcoma of the uterus that have come under my observation in the last ten years, fourteen, on close study and in the light of better knowledge, have been proved to be cases of interstitial endometriosis, and the patients are still alive and well; in the other two cases the condition is still in doubt, owing to insufficient evidence and to a lack of a follow up. Undoubtedly sarcoma of the uterus does occur. One would expect it from the unrest of the organ during its functioning years, but the discovery of interstitial or stromatous endometriosis and endometriomas of the uterus has shown that the vast majority of these tumors heretofore diagnosed as sarcoma are really quite benign new growths, as proved by their origin, their mode of invasion, their nondestructiveness, the nonexistence of cachexia, and, last and most convincing, the absence of the lethal qualities of sarcoma. For these fourteen patients are alive and well after periods ranging from two to ten years.

What is stromatous or interstitial endometriosis? It is an invasion of the uterine wall and of the contiguous uterine tissues by the stroma cell of the uterine mucosa. The endometrium, as is well known, is made up of two types of cells, specific in the sense that they are found in the uterus and nowhere else and in that they have a special function. These two cells are the individual stroma cell and the gland cell. Their relationship is not fully known. Is the stroma cell the progenitor of the gland cell, or is it merely a foundation for the support of the gland cell? These are questions which cannot be answered convincingly at the moment. But opinion and research incline one to regard these cells of different origin, noninterchangeable and possessing different functions. I think I may state definitely, as a conclusion of my studies, that their origin is from basically different structures at a different period of embryonic life, and that the stroma cell is not the parent of the gland lining. However, that is not germane to the subject. Functionally, the two cells respond to the hormones which determine the menstrual cyclic changes, but in quite a different way. The gland cells become hyperplastic and seem to spend all their energy in division in the follicular stage of the ovary, to be superseded later by hyperfunctional characters in the corpus luteum stage of the sex organ. Whereas the stroma cell, which heretofore has been a neglected cousin, has a much less conspicuous rôle. These cells enlarge and proliferate during the follicular stage and range themselves into three layers: the basal, the spongy, composed of an open work of glands, and the superficial compact layer, composed largely of stroma cells. The superficial layer takes on a decidual change just before menstruation sets in, and is known as the decidua menstrualis. The later changes are due to vascular regression and are destructive in character. All this is a preparation for, and regression after lack of, impregnation. The object of enumerating these changes is to show

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that the specific cells of the endometrium are in a constant state of flux during the whole of the sexual life, and that they are regulated by the ovarian hormones. It is known that every function of the body is under control of something else, and that controlling factor is usually a hormone; and that these hormones are subject to an increased or a depressed output, as the result of a legion of causes which operate from within and without; and one must understand that all gland aberration is in the nature of an accommodation to a change in environment, and whether that change is in the remote environment or in the immediate internal milieu surrounding the cell is a matter of degree and not specificity. Excessive action and deficient action of the glands which control function are the two specific ways in which they modify their influence. The uterine wall, as distinguished from the endometrium, has three component tissues. They are muscle, connective tissue (including elastic tissue) and endometrial stroma cells. It is impossible to state at the present how much and to what depth the stroma cells of the endometrium normally pervade the uterine parietes. But in a vast majority of cases in the sexual age there is a diffuse ramification permeating between the muscle bundles into finer and finer branches, as one recedes from the basal layer of the endometrium. Under abnormal endocrine conditions the specific endometrial elements pervade the uterine wall to a definitely pathologic degree, and this pervasion may be, and usually is, composed of both stroma and glandular elements, or (and this is the chief interest of this paper) it may be composed of stroma cells only. In this respect it has been indistinguishable from sarcoma of the uterus. When both endometrial elements invade the uterine wall, these may function simultaneously and similarly to the normally situated endometrium, and thus in this condition there is a distinguishing gross feature. But the stromatous invasions never respond to the menstrual cyclic changes, so that in this feature also their resemblance to sarcoma is enhanced.

STROMATOUS INVASIONS

Stromatous invasions of the uterine wall may be diffuse and cause no loss of uterine symmetry, or they may be local, giving rise to a definite tumor, causing loss of symmetry and on bimanual examination closely simulating fibroma, for which they are almost invariably mistaken. The invasion extends along the lymphatic channels, between the muscle bundles of the uterine wall; and even in their most rapid forms of growth, though they invade the lymphatic and venous channels, they do not destroy the other tissues but merely crowd them aside. The lymphatic linings are mostly intact, even though the lumen is filled with an invading growth. The same applies to the venous vessels, though venous invasion is much less common than lymphatic invasion. When the endometrial growth progresses along a vessel, whether lymphatic or venous, it usually carries its own blood supply. In the diffuse types (endometriosis) the growth may pervade the whole depth of the uterus and invade the lymphatics of the broad ligament, and by direct continuity extend beyond the pelvic limits. The new growth may give the lymphatics of the broad ligaments the appearance of thick ropes extending to the pelvic wall, and on opening the invaded channels one can roll the growth out as a worm from its bed. The type of component cell is that of a small round-cell sarcoma. But the blood vessels are the normal thick-walled vesses of the invaded tissue, or thin-walled vessels associated with the invading tissue, and, as the growth does not destroy fixed tissues but merely pushes them aside or surrounds them, these different types of vessels are often in close ap-

proximation. In the local forms of this growth (endometriomas) the tumor may consist of a definite mass with extensive roots at its periphery and without a defining capsule. In the more chronic types a capsule is formed both by compression of the surrounding tissues and by concomitant growth of these tissues under the common growth stimulus. Depending on the chronicity of the growth, the component cell may vary from a small round-cell type through the spindle type to that approaching the component cell of a richly cellular fibroma. The growths are frequently multiple and of varied size and may occupy any site in the uterine wall.

At times the growth is restricted entirely to the mucosa of the uterus. Under these circumstances the mucosa is greatly thickened and almost devoid of glands and is prone to develop more rapidly in places to form polypi. Tissue of this nature obtained by curettage has almost invariably been diagnosed as sarcoma and in the lesser forms as an interstitial endometritis.

It is not known what causes determine an interstitial cell proliferation to pervade the uterine wall in one case and to grow into the uterine cavity in another, any more than it is known what may cause an epithelial growth to develop as a surface papilloma in one case and as an invading carcinoma in another. In the more chronic forms of stromatous endometriomas there is frequently an accompanying mixed endometriosis of the extra-uterine appendages and contiguous pelvic tissues, and in about 30 per cent of cases there are accompanying fibromas and fibromyomas. The extra-uterine endometriosis, giving rise to nodules in the pouch of Douglas, is a valuable aid to clinical and pathologic diagnosis. The presence of the fibroids and myomas and the general hypertrophy of the uterus which accompanies any form of the uterine wall endometriosis are a response of the component cells of the uterine wall to the common stimulus of the abnormal hormonal influence.

Ectopic endometrial invasions of tissues may or may not respond to the hormones of the menstrual cycle. Those invasions that are composed of the two specific elements of the endometrium, namely, stroma cells and gland cells, may or may not respond. This depends on extrinsic and intrinsic factors of the ectopic growth. Among these are locations, soil, organ-host, vascularity and quantum of hormonal stimulus. Ectopic endometrial growths, composed exclusively of stroma, seldom or never respond to the menstrual influences.

Parietal endometrial invasions of whatever kind, but especially in the stromatous types, are usually only the most obvious expressions of the abnormal stimulus. In all the cases of stromatous invasion of the uterine wall, one finds other parts of the genital canal responsive to the same cause, but in a less striking degree. In a large percentage of cases one finds hypertrophic responses in the nature of cystic occlusions, hypertrophy, polypi, ectropion, adenomatous invasion of the cervix and precancerous (so-called) changes in the cervical epithelium. I have already mentioned the frequent association of pelvic endometriosis, fibroids and myomatous growths in association with uterine endometriosis.

In order to give a picture of stromatous (interstitial) uterine endometriosis, I shall outline one case of diffuse endometrosis and one case of endometrioma of the uterine wall.*

REPORT OF CASES

CASE 1. *History.* Mrs. M, aged 47 years, was sent to me for hysterectomy for the cure of a fibroid. She had consulted her family

* For further particulars of cases I refer to my article on "Interstitial Endometriosis" in the "Transactions of the American Association of Gynecologists, Obstetricians and Abdominal Surgeons" of 1938, to the article of similar title, to appear shortly in the *Journal of Obstetrics and Gynecology of the British Empire*, and to my monograph on "Endometriosis," approaching completion.

physician, Dr. George Berwick, complaining of being "run-down" and always tired, and she had noticed some fulness of the lower abdomen during the past weeks. Menstruation, which started at the age of 12, was from three to four days' duration and recurred every twenty-eight days; there was no dysmenorrhea. There were two children alive and well, the youngest being 22 years of age; a third had died at birth.

Physical Examination. General examination showed no abnormality except a very relaxed perineum and a globular mass in the abdomen. On bimanual examination the uterus was found to be symmetrically enlarged, hard, and the size of a three months' pregnancy. It was somewhat fixed and drawn to the right. The appendages were not definable. There was not the slightest doubt in my mind but that I was dealing with a fibroid of the uterus.

Operation. During perineorrhaphy on April 24, 1929, the vagina was found congested, and blue from venous stasis, and bleeding was very free from every cut surface. A thickened band extended up the vaginal wall to the right fornix. This at first was taken as a scar of dystocia, but when its margin was reached in the denudation, the tissue was found very friable, and the venous bleeding was hard to control. However, its true nature was not suspected at the time. When the abdomen was opened, there were no adhesions. The uterus was symmetrically enlarged to the size of a three months' pregnancy and drawn to the right of the pelvis. There was tremendous venous congestion of all the pelvic tissues, and the veins of the pampiniform plexus were engorged and markedly varicose. The right broad ligament was shortened and thickened but plastic. This thickness extended into the right iliac fossa in a continuous extension from the pelvis. The ovary was somewhat enlarged, bound by a few filmy adhesions and contained a small hematoma, and the right fallopian tube, edematous and blue, hung free like a wet drape. The left appendages, congested and edematous, did not present any gross abnormality, and no infiltration in the broad ligament was apparent. The picture transcended all my surgical and clinical experience. The right broad ligament was incised between clamps placed as far out as possible. From the cut surface brainlike tissue immediately oozed out under pressure. This could be wiped off with sponges and was semiliquid. The extension of this substance into the right iliac fossa was interpreted as a malignant growth. The left broad ligament was then incised at its uterine end; the left appendages were not removed. The broad ligaments were opened to reach the ascending branches of the uterine artery, with the intention of doing a supravaginal hysterectomy, as the case seemed hopeless. The right broad ligament everywhere was infiltrated by the brainlike substance, and as the right border of the uterus was approached, the finger opened a cavity the size of a filbert, containing the same substance. The right artery was not found, and was in all probability occluded. When the uterus was amputated, this same brain like tissue oozed out from the cut surfaces at the isthmus from multiple lymphatic spaces of all dimensions, and on the right side was the aforementioned cavity, now cut across, filled with the same semiliquid tissue. The operation was hurriedly completed, and the patient left the operating room in good condition.

On examining the specimen before leaving the operating room, it was found that the growth extended out from the limits of the uterus on the right side, along the lymphatics of the broad ligament; that these were visible from the surface, coursing out like ropes to the pelvic wall; that the lymphatics, when carefully opened along their long axis, allowed a roll of tissue, like an earthworm, to be removed, leaving the lymph channel intact; that one of these lymphatic molds was 1¾ inches (4.5 cm.) long, pinkish gray and about the size of a full-grown earthworm, and to heighten the resemblance, there was a larger part in the center about ¼ inch (0.64 cm.) long, dark red, evidently discolored by a small hemorrhage, in the substance of the growth. The uterus was then incised longitudinally along its anterior wall, and from hundreds of channels of all dimensions there slowly oozed out this new growth, which evidently was under some general pressure. One could grasp these wellings with a tissue forceps and draw them out. Sometimes they yielded to the traction, leaving a patent lymph vessel that was intact and gaping, or, the new growth, being released from the forceps, sprang back more or less into the lymph cavity. The consistency of these tissues was evidently firmer than that of the cavity about the uterine artery, the contents of which, though having the same general characters, had undergone some slight liquefying degeneration. The uterine stroma was firm but edematous. It was then found that the growth occupied the anterior wall and isthmus, and that the uterine cavity lay with a convexity backward. The posterior wall was about ¾ inch (1.9 cm.) thick and was free from adhesions. The mucous membrane appeared normal. The condition was so novel that I sat down and wrote a complete description of the condition and called in all

the members of the staff present in the hospital at the time to examine the extraordinary specimen. There was no doubt in the mind of any one present but that we were dealing with a malignant growth, probably a sarcoma.

Pathologic Examination. The gross specimen consisted of a uterus about the size of a fetal head, showing on section numerous widely dilated blood vessels and lymphatic channels, which contained a soft lymphoid structure in the form of a coagulum. Even below the tube and ovary the vessels were thrombosed. The ovary contained a hemorrhagic body resembling a degenerated corpus luteum. The endometrium was soft and glistening.

Microscopically, sections of the uterus showed isolated and diffuse areas of small, round, deeply staining polymorphic cells, which were lying in a hypertrophied myomatous tissue of the uterus. The blood vessels and lymphatics contained plugs of this growth. The picture was that of a sarcomatous degeneration of a fibromyoma.

Diagnosis. This was sarcoma of the uterus.

Later Course. The patient refused to undergo high voltage x-ray exposure, and when her recovery, which was uneventful, was completed, she was sent back to her physician. Exactly two years later she returned because of metrorrhagia, and on examination it was found that the pelvis was filled with new growth, and that large liver-like polypi protruded through the dilated external os and from perforations of the right fornix, filling the entire vault. These broke down easily on examinaion and bled freely. There was an ill defined mass in the right iliac fossa, which did not cause any symptoms. The patient's general health appeared excellent, and she did not complain of severe pain. It was decided on consultation to excise as much of the polypi as possible and insert radium. This was done on April 2, 1931.

The notation made at the time of operation by the radium specialist who took over the care of the patient under my supervision is as follows: "The vagina was filled with downward-growing sarcomatous polypi of the cervical stump and vault. This growth was continuous with that in the abdomen." The diagnosis was extensive sarcomatous lesion.

Second Operation. The vault and shell of the dilated cervix were cleaned out digitally, and radium was placed in situ, the dosage being 50 mg. applied for 30 hours, or 1,500 milligram hours.

Pathologic Report. Microscopic sections showed a diffuse cellular structure composed of small round and spindle cells, exhibiting numerous mitotic figures. The tissue was very vascular. The growth corresponded to that seen in the sections taken in 1929, except that no large blood vessels were involved.

Diagnosis. This was small round-cell sarcoma (metastatic growth from the vagina).

Subsequent Treatment and Recovery. Again the patient would not submit to high voltage x-ray treatment, owing to some deep-seated prejudice. She returned in May 1932, thirteen months later. She was in good general health, and her color was excellent. But she now had a growth in the right iliac fossa, the size of a small rugby football, insensitive, hard and fixed. The right leg was three times the size of the left about the thigh, and the ankle was as large as the left thigh. The patient could walk only by dragging the leg along, owing to its unwieldy weight. She was suffering a great deal of pain both in the abdomen and down the leg, and had lost a great deal of weight, but not her cheerful disposition. She finally submitted on combined persuasion to x-ray treatment. Frankly, it was not expected that this would accomplish much. She wished to be operated on, but finally accepted assurances that operation could accomplish nothing useful.

Dr. Howard Pirie began x-ray treatment on May 10, 1932, completing the course on June 7. There were eleven treatments in all. The total number of hours was two and three-quarters, with 5 milliamperes and 200 kilovolts peak at a distance of 15 inches (38.1 cm.) applied for fifteen minutes.

The change was extraordinarily rapid. Within two months the abdominal growth was barely palpable as a small induration in the right lower quadrant; the vagina and cervix presented nothing abnormal, and on bimanual examination there was some induration in the right fornix which seemed to connect with the induration in the abdomen, though this could not be definitely determined. What impressed the patient and her friends most was that her swollen leg soon regained its normal dimensions and functions.

In May 1939, ten years after the patient was first operated on for sarcoma, she was in excellent health.

CASE 2. This is case 8 of my series previously published. It is the case which by its unusual characters led to a complete retrospect of the other cases, and in the light of this new knowledge enabled a new concept and diagnosis to be made and a clear perspective to be obtained.

History. Mrs. D., aged 26, who had been married but a few months and had never been

pregnant, a patient of Dr. Power, entered St. Mary's Hospital with the preoperative diagnosis of degenerating fibroid with superimposed infection. Her complaints were menorrhagia and metrorrhagia, and abdominal pain. The onset dated back seven weeks; it had been acute, and she had been confined to bed for four weeks before Dr. Power saw her in consultation. I saw her in consultation with him a few days later.

Physical Examination. The introitus and vagina were healthy; there was a copious serosanguineous discharge. A mass filled the pelvis, rising to within 1 inch (2.54 cm.) of the umbilicus, and there was a diffuse infiltration of the pelvis and lower abdomen, suggesting a widespread infection. The leukocyte count was 7,000 and the sedimentation rate but slightly more rapid than the normal. There were a low temperature and a normal pulse rate.

Operation. On incision great vascularity and edema of the subcutaneous tissues were noted. There were also widespread edema of the parietal peritoneum and signs of a subacute peritonitis extending to about 2 inches (5.08 cm.) above the umbilicus, with recent adhesions. The uterus when freed was the size of a three months' pregnancy. There was a conglomerate tumor composed of uterus, ovaries and tubes intimately bound together by a diffuse intraperitoneal endometriosis. The pouch of Douglas and the uterosacrals were also involved. The rectum was solidly bound to the upper portion of the vagina and the lower third of the uterus. Both appendages were liberated and removed. The uterus was then removed by coning out the length of the cervix. An unusually smooth recovery followed.

When the uterus was opened, the walls were seen to be diffusely thickened, and the right upper cornu was filled by a tumor 3 to 4 cm. in diameter, containing a cavity 2 cm. across. The cavity lining was smooth and glistening. The content, of a pale straw color, coagulated on exposure. The cavity wall was grayish and about 0.5 to 0.75 cm. thick and was 0.5 cm. from the uterine cavity at its nearest point. Further study of the uterine wall revealed numerous other yellow areas, ill defined from the surrounding tissue, varying in size from that of a large bean to that of a millet seed, and of a granular appearance on the cut surface. These were most numerous in the region of the isthmus and extended from the mucosa to the outer limits of the uterine wall. The cervix was thickened, as was the isthmus. The mucosa of the uterus was thin and hemorrhagic. At the upper margin of the posterior uterine wall near the tubal origin was a subperitoneal nodule the size of a marble, sessile, whitish at its periphery, but dark blue at the center and highest spot, as if filled with blood. This was thought to be a chocolate cyst, but on section it proved to be a congested growth, similar to the others. There was a diffuse endometriosis of the ovaries, characterized by sclerosis, follicular cysts and tarry cysts. Both ovarian tubes were the site of a hematosalpinx.

Pathologic Examination. Sections were taken from almost every part of the uterus, cervix, isthmus, ovaries and tubes. There was a preponderance of stroma in the endometrium as compared with the glandular elements. These stroma cells dipped in large strands between the muscle bundles. In places these were broad and richly cellular and stained deeply with hematoxylin and not at all with eosin, so they could be traced with the naked eye or, better still, with greater ease with the inverted eyepiece of the microscope. The strands connected directly in places with the tumors, which were made up entirely of stroma cells. Some of these tumors were immediately contiguous with the mucosa; others were deep-seated. The largest tumor was undergoing coagulation necrosis. The small subperitoneal tumor, already described, was of the same type, but, not being subjected to so much pressure, had a type of cell that was endometrial in all its characters. The individual cells had a minimum of cytoplasm which stained very faintly with hematoxylin, a large oval nucleus with a cleancut, deeply staining nuclear membrane, a nucleolus also deeply staining, and a great deal of granular and filamented chromatin. The degeneration process was of a hyaline type, involving equally both tumors and uterine tissues. The latter greatly hypertrophied in association with the new growth.

The upper part of the cervical canal showed a widespread adenomatous overgrowth of the cervical racemose glands.

Diagnosis. This was: (1) adenoma of the cervix, (2) endometriosis of the ovaries and (3) stromatous endometriomas of the uterus.

Comment. It will be seen from the case histories just reported how difficult it may be to differentiate these growths from sarcomas. That the growths in all my cited cases were diagnosed as uterine sarcoma is not surprising. But

closer study of these cases with the increased knowledge on the subject, together with a study of the follow-up system, makes it inevitable that the diagnosis be changed for a much more favorable one. Most encouraging is the fact that all the patients are alive and well from two to ten years after operation—a result inconsistent with sarcoma. Moreover, the connection of these growths with the endometrial stroma and their propagation from this source leave the matter no longer in doubt.

WHAT IS THE CAUSE OF ECTOPIC ENDOMETRIAL GROWTH?

In endeavoring to answer this question one passes from the factual to the hypothetic. The philosophic precedes the scientific in all branches of study. It is known that the ovary is, if not the primary, at least an essential, intermediary for the functioning of the endometrium. Menstruation ceases with the removal of the ovaries. It is known with equal certainty that the ovary is almost essential for the continued growth of ectopic endometrial tissue. The cases on record of continued or renewed activity of endometriosis after bilateral ovariotomy are few indeed in the literature. However, they do occur, as a case already reported by me, in which the condition recurred with extraordinary virulence seven years after bilateral ovariotomy and a full course of high voltage x-ray therapy. It is known equally well that except for two cases reported in the literature (and these doubtful), the disease is limited to the zone of ovarian influence. The hormone of the ovary, which would seem to be the culpable agent, is the growth hormone, estrin or one of its derivatives. How does it operate? Estrin causes great thickening of the endometrium by a multiplication of its cells, during the maturation of the ovarian follicle. Progesterone, on the other hand, is the maturation principle of the endometrial function, causing the endometrium to become succulent preparatory for nidation. In the intermediate stage, after rupture of the follicle, one finds a diminishing effect of estrin and increasing effect of progesterone as maturation of the corpus luteum proceeds.

If endometriosis is the result of an excessive action of estrin, this excessive action may be brought about by one of two means. It may imply an excess of estrin in the blood, which should be measurable. But it is known that the amount of estrin in the blood may vary within wide limits without producing appreciable physiologic or pathologic results. There is a close analogy in the sugar content in the blood. One has to take into account the individual susceptibility in each case. But it is known also that estrin can be retained in the tissues in large quantity and is not liberated except by a liberal supply of progesterone. Could it not be, then, that endometriosis is due to a lack of progesterone, causing undue and prolonged action of estrin in the endometrial cells? For the endometrial cells are thought to be the repository of estrin retention. Be that as it may, one must recognize that the ovarian function plays a very prominent rôle in endometriosis. But how can one explain the continued or renewed activity of the endometriosis after bilateral ovariotomy? Nature seldom trusts the permanence of the species to any essential function of a single gland. The glandular system possesses a vicariousness that is unknown in any other corporeal function. Substitutive function is an interesting feature of endocrinology. The glands of internal secretion are like a group of banks cooperating for mutual protection, and individual or collective help is always at hand. Fatigue in a gland can be temporarily remedied by assistance from adjuvant glands; but exhaustion of the reserve of a gland eventually entails exhaustion of the subsidizing glandular systems. It

is known that there is not only cooperation by substitution of function, but there is also cooperation in the nature of restraint of function. For example, there is a direct antagonism between thyroid and ovarian function, and it is within the experience of every clinician that ovarian function is inhibited in hyperthyroidism, frequently to the degree of causing arrest of menstruation, and that hypothyroidism is chiefly accompanied by menorrhagia and metrorrhagia, which are merely expressions of vitiated ovarian function. What, then, can substitute for the absence of the ovaries in a case of ovarian ablation? Primarily renewed activity of the endometriosis is not due to accessory ovaries, because in one of my cases total ablation of the ovaries was followed immediately by a heavy course of high voltage x-ray therapy, and renewed activity of the endometriosis did not occur until six and a half years after operation. Prolan A of course would come into question, and I think all are agreed that, though prolan may be the stimulating cause, it cannot of itself supply the estrin except through the intermediation of some other organ. It is known that the adrenal gland can act as a substitute organ for the products of testicular and some ovarian hormonal products, but I also believe that endocrinologists are not prepared to admit that the adrenal gland can produce vicariously the true ovarian estrogenic substances. This is a subject full of interest, but as yet inconclusive. That estrin is produced by a substitute organ, if estrin is the cause of endometriosis, cannot be gainsaid. Estrogens are chemically closely allied to the carcinogenic tar substances, and one naturally asks oneself, if, associated with endometriosis of the pelvis, one so commonly finds overgrowth and precancerous conditions of the cervix, whether endometriosis itself is not productive of cancer. And here is a contradiction. For, though on microscopic and clinical grounds, one would assume that endometriosis would readily pass over into a true malignant growth, yet virtually most of the cases of malignant growth with endometriosis have been shown to be cases in which there was an accidental association of the two diseases. Stromatous endometriosis is nonmalignant and is not destructive of tissue or of life. Endometriosis is inhibitory to pregnancy. In my fourteen reported cases there was barrenness or sterility for a period of at least fifteen years. Endometriomas migrate in the uterine wall in a manner similar to that of fibroids. Eventually in their migration they become subserous or submucous, at first sessile, later pedunculated. Intra-uterine polypoid endometriomas are not uncommon. At times the tumors necrose and are shed.

TREATMENT

Stromatous endometriosis is a new growth, assuming all degrees of rapidity of division and various degrees of cell embryony. As it is closely dependent on ovarian function for continued activity, removal of both ovaries or mechanical devitalization of these organs generally brings about a quick regression of the endometriosis. In women approaching the menopause such a procedure, whether accomplished by surgical intervention or by high voltage x-ray or radium therapy, is an easy and effective means of overcoming the disease. But endometriosis unfortunately occurs in any of the years of sexual activity, and, when confronted with a case of stromatous endometriosis in a young woman or girl, one is dealing with a serious combination of circumstances. Though it is known that ordinary endometriosis, in which both cellular elements of the endometrium are involved, often regresses spontaneously, one cannot state with the same assurance what is the course of stromatous endometriosis. The number of cases studied has been too few to war-

rant any conclusions to be drawn in respect to the course. It is known, as outlined in my work, that spontaneous degeneration frequently occurs, but under the present circumstances it would be hazardous even to venture an opinion as to whether this is merely a liquefaction due to local vascular derangement or the initial step to a complete cure. There is another inhibitory factor to a discriminating treatment, and this is the fact that the diagnosis of interstitial endometriosis and endometrioma is seldom made except at operation or by biopsy, so in the majority of cases one will have completed one's operation under a temporary false diagnosis, or the treatment by radium or x-rays will have been carried out under a permanently false diagnosis. At most, one can state that stromatous endometriosis and endometrioma is a new disease and will require a great deal of painstaking study of large numbers of cases before one can be dogmatic as to its cause, course and end-results.

SUMMARY

A new disease, stromatous or interstitial endometriosis, is described. This is an invasion of the uterine wall and contiguous uterine tissues by the stroma cell of the uterine mucosa. The local form of the disease is endometrioma. Differentiation from sarcoma is difficult. Of a series of sixteen cases observed by the author in the last ten years, in which a diagnosis of sarcoma had been made, fourteen were proved to be cases of interstitial endometriosis, and the patients are alive and well from two to ten years after operation. Two cases are reported in detail, one of endometriosis and one of endometrioma.

The author believes that the causative factor in this disease is a disturbance of ovarian function. Treatment consists in removal of the ovaries by operation or in x-ray or radium therapy.

RÉSUMÉ

Le sarcome et l'endométriose de l'utérus

L'auteur décrit une nouvelle maladie, l'endométrioise interstitielle. Cette condition est dû à un envahissement de la paroi utérine par les cellules interstitielles de la muqueuse utérine. La forme locale de la maladie est l'endométriome. Le diagnostic est difficile. Il importe d'exclure le sarcome. Dans une série de seize cas diagnostiqués sarcomes, il fut démontré que quatorze étaient des cas d'endométriose interstitielle. Ces malades furent opérées et tenues sous observation de deux à dix ans après avoir été opérées. Les malades sont toutes bien portantes. L'auteur décrit en détail deux cas, un d'endométriose et un d'endométriome.

L'auteur attribue la maladie à un dérangement fonctionnel de l'ovaire. Le traitement consiste en l'ablation de l'ovaire ou en l'emploi des rayons X ou du radium.

ZUSAMMENFASSUNG

Sarkom versus Endometriosis des Stromas

Eine neue pathologische Einheit, die interstitielle oder stromatöse Endometriosis, ist beschrieben. Diese ist eine Invasion der Stromazellen der Gebärmutterschleimhaut in die Wand des Uterus und die umliegenden Gewebe. Die lokale Form der Krankheit ist das Endometriom. Die Unterscheidung vom Sarkom ist schwierig. Vierzehn Fälle aus einer Serie von sechzehn Fällen, die der Autor in den letzten 10 Jahren beobachtet hatte und in denen die anfängliche Diagnose Sarkom war, erwiesen sich später als Endometriosis und waren nach einer Zeitspanne von 2-10 Jahren nach der Operation am Leben und gesund. Zwei Fälle werden ausführlich beschrieben, und zwar einer von Endometriosis und ein anderer von Endometriom.

Der Autor glaubt dass die Ursache dieser Krankheit eine Störung der Ovarialfunktion ist. Die Behandlung besteht in der Entfernung der Eierstöcke oder in Roentgen oder Radiumtherapie.

SUMARIO

Sarcoma versus stromatous endometrósis del utero

Una enfermedad nueva, endometrósis stromatous ó intersticial, es descrita. Esta es una invación de la pared uterina y tejídos uterinos contiguos por el estroma celular de la mucosa uterina. La forma local de la enfermedad es endometrióma. La diferenciación de el sarcoma es dificultosa. De una serie de diez y seis casos observados por el autor en los diez ultimos años, en los cuales el diagnóstico de sarcoma fué hecho, catorce provaron ser casos de endometrósis intersticial, y las enfermas estan vivas y sanas de dos á diez años despues de la operación. Dos casos son reportados en detalle, uno de endometrióis y otro de endometrióma.

El autor cree que el factor causante de ésta enfermedad es un trastorno de la función del ovario. El tratamiento consiste en la extirpación de los ovarios por operación ó por rayos X ó radioterapia.

RIASSUNTO

Sarcoma ed endometriosi stromatosa

Una nuova entità patologica, la endometriosi stromatosa o interstiziale, è descritta. Si tratta di una invasione delle cellule dello stroma della mucosa dell'utero nella parete e nei tessuti attigui. La forma locale della malattia è l'endometrioma. La differenziazione dal sarcoma è difficile. Quattordici casi da una fila di seidici casi osservati dall'autore negli ultimi 10 anni e nei quali una diagnosi di sarcoma fu fatta, provarono di essere endometriosi interstiziale ed le malate erano vive e sane dopo un periodi di 2-10 anni dopo l'operazione. Due casi sono riportati dettagliatamente, uno di endometriosi ed uno di endometrioma.

L'autore crede che il fattore causativo di questa malattia sia un disturbo della funzione ovarica. Il trattamento consiste in rimozione de le ovaie oppure in roentgen o radium terapia.

Dr. Irvin Abell, of Louisville, Ky., formerly president of the American Medical Association, received the honorary degree of doctor of laws at the annual commencement of Marquette University, Milwaukee, on June 9. The degree of doctor of science was conferred on **Dr. Abell** by Georgetown University, Washington, D. C., on June 3.

The Royal College of Surgeons has awarded to **Professor Leriche** the Lister Medal offered by the Lister Memorial Fund and given every three years since 1920 to a surgeon who has done outstanding work in a special field.

The College of Physicians of Philadelphia has announced that the Alvarenga Prize for 1939 has been awarded to **Dr. Harry Goldblatt,** professor of experimental pathology and associate director of the Institute of Pathology, Western Reserve University School of Medicine, Cleveland, for his contributions to knowledge of the pathogenesis of hypertension. The Alvarenga Prize is awarded each year on July 14, the anniversary of the death of the donor, Pedro Francisco daCosta Alvarenga, of Lisbon, Portugal, who was an associate fellow of the college. It is given to the author of "the best memorial upon any branch of medicine, which may be deemed worthy of the prize."

COMMON DUCT INJURIES

CAUSATION AND REPAIR*

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A REVIEW of the literature for the past ten years on surgery of the biliary tract impresses one with the frequency and seriousness of damage to the hepatic and common bile ducts. There are two reasons for this: first, the popularity of cholecystectomy over cholecystostomy, and, second, the more frequent exploration of the common bile duct in a search for stones. Inexperience of the surgeon has contributed chiefly to these disastrous results, but occasionally accidents may happen in difficult cases even with an experienced surgeon.

Anomalies of the duct account for a few accidents, but the majority of accidents result from incomplete exposure of the duct during operation or clamping blindly for hemorrhage in cases in which the cystic artery slips away from the clamp or the ligature becomes loose. The cystic artery is a branch of the right hepatic artery and branches off at a level above the cystic duct, so that in some cases the damage has invariably been in the hepatic duct at a distance of ¼ to 1 inch (0.64 to 2.54 cm.) below the bifurcation of the right and left hepatic ducts. In case of hemorrhage from the cystic artery, one can avoid the blind application of the clamp if one will place the finger in the foramen of Winslow and compress the gastrohepatic omentum between the thumb and forefinger, thus assuring a dry field and enabling one to pick up the bleeding point when the pressure is released.

Dr. Lahey[2] attributed some of the accidents to the fact that after the cystic duct is cut, traction on the hemostat tears away the cystic artery, resulting in bleeding, and then the hemostat is applied blindly. At any rate, however the bleeding occurs, it probably accounts for many of the disasters encountered.

Actual injury to the duct may occur, first, from anomalous ducts or, second, from incomplete exposure of the structures before cholecystectomy. As stated by Eliot,[1] "Abnormalities in the course, length, and termination of the cystic duct and variations in the cause, origin, and distribution of the cystic artery are important predisposing causes." Complete exposure will generally reveal the occasional anomaly. A review of the cases seen by my associates and me showed that many of the patients were quite thin, that is, patients in whom one would not expect damage to the ducts to occur. However, the damage takes place because a great deal of traction is put on the gallbladder, angulating the common duct, with the result that either an oval segment is taken out of the duct by the curved clamp or the duct is cut across completely. We have had examples of each proved at operation. If an oval segment is removed by the clamp, stricture results within a period of months or years. If the duct is completely cut across, the patient will have symptoms of trouble immediately after operation.

One, of course, must also bear in mind the fact that stricture may occur from ulceration of stones and may be a coincidental condition at the time of cholecystectomy, which, if not recog-

* Read at the Scientific International Assembly of the International College of Surgeons, New York, May 22, 1939.

nized, may later be attributed to the operative procedure. However, the patient's symptoms in such a case should arouse some suspicion that the ducts are involved, and exploration should reveal this condition. It is possible, as shown by some of our cases, that strictures may exist for a long time and produce relatively mild symptoms as long as the bile is normal in consistency. However, if infection intervenes and the bile becomes thick and mucoid, chills, fever and jaundice will probably appear. These, of course, also are symptoms of an overlooked stone in the common duct, and it may not be possible to make a diagnosis until operation. A detailed history of each case will frequently give a clue.

We are, then, dealing with a more or less new disease entity—one which is brought about, first, by the popularity of cholecystectomy over cholecystostomy, which was performed more commonly twenty years ago, and, second, by the fact that with more explorations of the common duct, additional accidents are to be anticipated. It is important, therefore, first, to point out the possible dangers of such procedures and, second, to build up a defense procedure for correction of the condition. This is best done by reviewing the articles of those who have been interested in the subject and to profit by their wide experience. Walters,[3] Lahey[2] and Eliot[1] have made notable contributions from which all surgeons may profit.

OPERATIVE PROCEDURES

The common operative procedures for strictures from any cause are about five in number and are as follows:

1. *End-to-End Anastomosis.* If the duct is accidentally divided at the time of operation and if such an accident is recognized and repaired at the time of operation, I believe there is a good chance that a satisfactory result will be obtained. A successful approximation may be made, and there is not a great deal of scarring as there is in the case where a stricture has been present for a long time. Furthermore, infection is not present as it is in the long-standing stricture, which may, on account of chronic obstruction, lead to infection in the ducts and in the liver. In addition, in a case of too long standing, it may be necessary to excise a considerable segment, and the sutured ends of the duct may be under tension which will generally result in failure of reformation of the stricture. While there have been brilliant results from such a procedure, the routine use does not seem to be in favor.

2. *Choledochoduodenostomy.* This is applicable to strictures involving the terminal portion of the duct, especially when the gallbladder has been removed. It has also been used when the ampulla of Vater has been resected for papilloma or carcinoma. A variety of technics have been employed, with good results.

3. *Hepaticoduodenostomy.* Since in many cases reconstruction must be made following operative trauma which occurs at or above the level of the cystic duct where the distal portion of the duct often cannot be located, hepaticoduodenostomy in such cases is the operation of necessity and, I believe, of choice.

4. *Implantation of the Biliary Fistula into the Stomach, Duodenum or Intestine.* While I have had no experience with this procedure, it is the opinion of those who have used it that it is an operation of necessity and not of choice. Lahey,[2] who originally was very enthusiastic about it, feels that it should be done only as a last resort in cases where no hepatic duct is demonstrable for anastomosis. If one is fortunate enough to end up with a biliary fistula in such a case, an attempt may be made later to transplant it. Objections to this method are: further formation of strictures in the fistulous tract or subsequent infection which spreads to the liver.

5. *Cholecystogastrostomy or Cholecystoduodenostomy.* This is a useful procedure, but it is limited certainly to those cases in which there is not much infection, and one must be sure of the patency of the cystic duct.

REVIEW OF CASES

I wish to report briefly my experience with twelve cases which necessitated an operation for the relief of stricture of the bile ducts. In seven of these a hepaticoduodenostomy was performed, and in four cases a choledochoduodenostomy, and in one case we were unable to locate any trace of the hepatic duct. In the latter instance a catheter was placed deep in the liver bed, with resultant formation of a biliary fistula, which is four months old at the time of writing. It is in this type of case that transplantation of the fistula is all that one can do.

The four choledochoduodenostomies were performed for the following conditions: stricture of the terminal portion resulting from stone, in two cases; resection of carcinoma of the ampulla of Vater, in 1 case, and papilloma of the lower end of the common duct, in 1 case. In all seven cases in which hepaticoduodenostomy was done, this was performed for stricture at or above the cystic duct resulting from cholecystectomy which had been performed at periods varying from two months to three years previously.

The technics of choledochoduodenostomy and hepaticoduodenostomy have been many and varied. In some, anastomosis has been made directly, sometimes over the implanted tube. I cannot in a brief paper discuss these variations. I shall allude only to the procedure which was used in my own eleven cases.

It was apparent from reading the literature that cholangeitis was frequently the cause of death, and in many patients it occurred immediately after operation. In these cases direct anastomosis over a buried tube was used. In view of that fact, I felt that an additional precaution would be institution of external drainage immediately after the operation, thereby avoiding the preliminary obstruction resulting from edema around the anastomosis, which generally is the beginning point of trouble. Therefore, in one of my early cases I made the anastomosis over a T-tube. This allows free drainage immediately after operation, and I think is accountable in some measure for the fact that only one patient in this group died as a result of operation. This was a patient who had had a cholecystectomy two and one-half years previously, and a secondary operation for stricture of the common duct three weeks later, when an end-to-end anastomosis of the duct had been attempted. This failed, and she had been jaundiced for two years before she came to us. The hepatic duct was found and anastomosis satisfactorily made. She had, however, a dark green, markedly enlarged cirrhotic liver such as one would expect from long continued obstruction and infection. One hundred and fifty cubic centimeters of bile was drained the first day. This amount gradually diminished day by day until on the tenth day none was drained. On this day bleeding from the wound began in spite of transfusion and the administration of desicol and vitamin K, and the patient died two days later. All the other patients made uneventful recoveries following operation.

Postoperative care is symptomatic. It has been our custom to let the tube drain fully without clamping it off until the jaundice has practically disappeared. This decompresses the liver and clears up the infection. During this time, transfusion, vitamin K and desicol are freely given to avoid the possibility of hemorrhage. The patients are encouraged to eat as soon as nausea ceases. When the jaundice disappears, we begin to clamp off the tube for hourly inter-

vals, increasing the time daily as long as the patient does not complain of pain which means obstruction from some cause. We have insisted that the tube remain in place for three to six months. Before the tube is removed, a cholangiogram is made, brominol or lipiodol being used. Fluoroscopic examination is valuable in ascertaining free exit of the solution into the duodenum. The tube originally was withdrawn, but, as has been pointed out, some damage may occur to the anastomosis when the arms of the T-tube are bent during removal. This is obviated somewhat by the cutting of a V opposite the stem of the T-tube in order to allow the ends to bend more easily. However, experience with several cases has shown that it is not necessary to remove the T-tube. In one of our earlier cases, the T-tube rotted away to the level of the skin; one night it disappeared under the skin, and the patient of course became alarmed. When he reported within a few days, no trace of the tube could be found. The skin was closed in over the sinus, and nothing was done. Peristalsis drew the T-tube through the anastomosis with no discomfort, and since this experience it has been our plan of treatment to cut the T-tube off below the level of the skin when sufficient time has elapsed and let it pass through the intestinal tract. This is a gradual procedure and will not result in tearing of the anastomosis. It has been done in five of our cases.

The following case is typical of those in which hepaticoduodenostomy was performed.

History. A man 32 years of age was admitted to the clinic on Jan. 4, 1939, complaining of jaundice and generalized pruritus. Ten months previously, in March 1938, cholecystectomy for cholelithiasis had been performed elsewhere. The presenting symptom at that time was pain, which had been present for three days in the upper portion of the abdomen. Jaundice had not been associated with this attack. The diagnosis was acute cholecystis with stones. There was a severe hemorrhage at operation. The immediate postoperative course had been stormy; jaundice developed, and on the fourth day the incision broke down and bile drained from it. However, this had healed within three weeks, and the patient was able to leave the hospital.

Mild jaundice without pain persisted with varying intensity until six weeks before entrance to the clinic, when it became more pronounced and was associated with generalized itching. At no time had there been abdominal pain. Stools had varied from yellow to clay-colored, and the urine had been dark. The past history was negative except that thyroidectomy had been performed for diffuse goiter with hyperthyroidism in July 1936.

Examination. Physical examination revealed a frail young adult who weighed 126 pounds (57.2 Kg.). The temperature was 97.9 F., the pulse rate 80, and respirations 20. The skin presented a moderate icterus, and the sclerae were slightly tinged. Recent excoriations due to pruritus were scattered over the trunk extremities.

Examination of the abdomen revealed the liver to extend one finger's breadth below the costal margin. No other masses and no tenderness were detected.

On admission, a diagnosis of stricture of the common duct was made.

Blood studies revealed an icterus index of 20. The prothrombin time was determined and found to be 15 seconds, 20 seconds being normal (Eating).

Twenty cubic centimeters of a 10 per cent solution of calcium gluconate, together with 1,000 cc. of a 5 per cent solution of dextrose in saline solution, was given intravenously each day for five days, affording marked relief from the pruritus. Repeat studies of the blood on the fifth day showed that the icterus index had risen to 25 units, while the prothrombin time was 17 seconds.

Operation. An exploratory laparotomy was performed Jan. 10, 1939. Close to the under surface of the liver adhesions were divided, finally exposing the portion of the hepatic duct about 1 cm. from the liver. A probe was passed into the duct, which was slightly dilated, liberating a considerable quantity of normal appearing bile. The probe could then be passed easily into the right and left hepatic ducts, the openings of which could be visualized through the end of the hepatic duct. However, on attempting to explore in the downward direction toward the common duct, obstruction was encountered, and the common duct could not be demonstrated. The duodenum was mobilized and brought up and approximated to the end of the previously dissected hepatic duct. An opening was made in-

to the duodenum, and an anastomosis with the stump of the duct was constructed over the arms of a T-tube. It was necessary to place one arm in the left hepatic duct in order to make it stay in place, the stump of the hepatic duct being too short. It was noted that bile flowed from the long end of the tube after the operation and that none escaped at the site of the anastomosis. A transfusion of 500 cc. of citrated blood was given during the operation.

Subsequent Course. On the fourth postoperative day the T-tube was clamped off for two hour intervals, without causing discomfort or leakage of bile around the tube. The following day the clamp was applied continuously, without untoward results.

By the eighth day the stools were dark, and it was apparent that bile was passing into the intestines, but the icterus index remained 20 units. The prothrombin time remained normal, and there was no indication of a hemorrhagic tendency.

On the sixteenth day the icterus index had fallen to 10 units, and the jaundice had obviously decreased. At the time of discharge on the eighteenth day (January 28) the patient looked and felt greatly improved, the stools were dark, and the tube had remained clamped off without leakage for several days.

When examined twelve days later (February 9) the patient weighed 133 pounds (60.3 Kg.), a gain of 7 pounds (3.2 Kg.), and the icterus index was 10 units. His appetite was good, and he felt excellent.

A follow up of this group of patients has shown that one died three years postoperatively of an intercurrent disease. Another has had severe attacks of cholangeitis. In this case, however, several such attacks had followed cholecystectomy and an attempted end-to-end anastomosis of the duct before we saw her and did a hepaticoduodenostomy. This case demonstrates the necessity of operating on these patients early, before they have attacks of chills and fever, which mean obstruction and infection. The remaining patients of the series are alive and in excellent health.

SUMMARY AND CONCLUSIONS

Injuries of the hepatic and common bile ducts have increased with the popularity of cholecystectomy in preference to cholecystostomy and the more frequent exploration of the common bile duct in search for stones. Treatment is, first, prevention of such injuries by visualization at the time of cholecystectomy and, second, a hepaticoduodenostomy or a choledochoduodenostomy, which gives more chance of success than other procedures. Twelve cases are reviewed, one of which is reported in detail.

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DISCUSSION

DR. RODRIGUEZ DIAZ, Havana, Cuba: I wish to discuss section of the cystic duct in the process of dissecting and tying this duct. In order to avoid this accident I do careful dissection of the duct. In cases in which there is severe pericholecystitis, and dissection is difficult, I do the cholecystectomy from the fundus to the neck, leaving the dissection of the cystic duct for the last, and if I still have doubt I puncture the gallbladder, extract all the stones and bile, and, enlarging the opening, introduce the index finger into the gallbladder and dissect it as one would a hernia sac until I reach the cystic duct. When this stage is finished I change my gloves and continue the operation.

DR. MOSES BEHREND, Philadelphia: Dr. Jones has presented a subject that is of intense interest to me. The peritoneum covering the ducts and blood vessels should be opened, and the cystic and common ducts and the cystic artery visualized, before any clamps are put on. If this is done, there will be fewer injuries than occur every day all over the world.

Surgery of the common duct is the most difficult one can do. Of 124 cases, in 81 a choledochostomy for stones was performed, and in about 30 cases the gallbladder was drained, because I did not believe at the time that a cholecystostomy should be done. But now one can perform it, notwithstanding the presence of jaundice in the common duct. In 20 cases no jaundice was present. In 44 cases we performed all kinds of anastomosis of the common duct to the duodenum or to the stomach, and I prefer to do the anasto-

mosis without the intervention of rubber tubes. The most successful anastomosis is done in the same manner as intestinal anastomosis, without intervention of tubes. I never use the T-tube, because I work on an individual basis, and one cannot set rules.

In 1921 I reported the case of a woman whose common duct had been destroyed by one of our master surgeons. There are many similar cases, although such accidents should be rare. In fact, in one case I deliberately cut across the common duct, on account of many adhesions to the gallbladder, in order to remove a badly diseased gallbladder. The patient had a T-tube in for six months and is now well.

I believe that the T-tube may remain for six months, or even for two years, if required. There is no danger in allowing the tube to remain, as long as one clamps it during the day and does not allow too much bile to flow.

RÉSUMÉ

Blessures du cholédoque: Causes et réparation

Les blessures des conduits hépatiques et du cholédoque sont plus fréquentes depuis que les chirurgiens préfèrent la cholécystectomie à la cholécystostomie et depuis qu'on explore le cholédoque pour dépister des calculs biliaires. Le traitement demande premièrement qu'on évite de blesser le cholédoque lors des maneuvres opératoires; secondairement une hépaticoduodénostomie ou une cholédocho-duodénostomie. Ce sont les deux meilleurs procédés opératoires. L'auteurs passe en revue douze cas dont un est minutieusement détaillé.

ZUSAMMENFASSUNG

Verletzungen des Ductus choledochus: Ursache und Behandlung

Die Verletzungen des Ductus choledochus und hepaticus sind seitdem die Cholecystectomie anstelle der Cholecystostomie allgemein angewandt wird und seitdem man die Exploration des Choledochus auf der Suche nach Steinen ausführt bedeutend häufiger geworden. Die Behandlung besteht erstens darin dass man einer Verletzung vorbeugt indem man den Ductus während einer Cholecystectomie sichtbar macht und zweitens in der Anwendung einer Hepaticoduodenostomie und Choledochoduodenostomie, die mehr Aussicht auf Erfolg als andere Methoden haben. Zwölf Fälle sind beschrieben und einer ist ausführlich behandelt.

SUMARIO

Lesiones del conducto común biliar: Causas y reparación

Las lesiones del conducto común y hepático biliar ha aumentado con la popularidad de colecistectomía en preferencia á la colecistostomía y la mas frecuente exploración del conducto comun biliar en la busca de piedras. El tratamiento es, primero, prevención de tales lesiones por visualización en el momento de la colecistectomía y, segundo, una hepaticoduodenostomía ó una coledocoduodenostomía, las cuales dan mas chance de éxito que otro procedimientos. Doce casos son revisados, uno de los cuales es reportado en detalle.

RIASSUNTO

Lesioni del condotto bileare comune: Causa e riparo

Lesioni del condotto hepatico e comune sono aumentate molto con la propagazione della colecistectomia invece della colecistostomia e della esplorazione più frequente del condotto comune in cerca di pietre. Il trattamento è primo di prevenire queste lesioni visualizzando il condotto durante una colecistectomia e secondo una hepaticoduodenostomia o una coledocoduodenostomia che dànno più possibilità di sucesso che altri metodi. Dodici casi sono considerati ed uno è riportato in esteso.

A NEW METHOD OF GASTRO-INTESTINAL SUTURING

WITH THE CONTINUOUS REVERSE-CROSSED INNER SUTURE AND THE CONTINUOUS OBLIQUE-RIGHT ANGLE SUTURE*

SIMON REISLER, M.D., M.I.C.S.

INDIANAPOLIS

IT is generally accepted that the success of gastro-intestinal operations depends largely on the thoroughness, accuracy and care in placing the sutures used in coaptation and hemostasis. While there is a difference of opinion as to the number of layers of suture necessary to insure good healing in gastro-intestinal anastomosis or closure, an analysis of the functions of these suture layers suggests that the innermost suture is the most important. Its function is to insure hemostasis, to secure accurate approximation, to produce a water-tight and air-tight connection and to protect the seromuscular layers from the contaminating effects of the visceral contents. With a well placed and efficient inner through and through suture, the seromuscular sutures are well protected and are not exposed, and the serosa heals quickly and firmly before the inner suture is absorbed or is shed into the visceral lumen. This suture, if inefficient or poorly placed, may be the cause of postoperative hemorrhage, tissue necrosis and ulceration, leakage and peritonitis. The latter is more often due to leakage than to soiling of the peritoneum during operation. The seromuscular suture, which is usually of nonabsorbable material, if improperly protected by the inner suture may be exposed to the visceral contents, may become a foreign body and gradually slough into the lumen. Occasionally it may become the site of an ulcer. The importance of an efficient inner through and through suture, the first line of defense, cannot be overemphasized.

I have for a long time looked askance at the generally accepted methods of placing this all-important inner through and through suture as being inadequate. The continuous through and through running suture, either free or locked, is used almost universally for the posterior layer in gastro-intestinal anastomosis. Glover's[6] free running suture, Heister's[4] continuous lockstitch and their modifications have long been in use; yet they are most unstable. One weak loop or a break in the suture material jeopardizes the whole suture line. They are subject to shirring, stretching, relaxation and contraction from the uneven pull of a heavy fluid-filled viscus or from distention due to gas. They provide poor hemostasis unless tightened sufficiently to strangulate the tissues, and they do not adequately protect the seromuscular sutures. In the anterior layer of the inner through and through suture, the Connell[2] stitch or a modification is often used. While it is efficient in turning in the edges, it is not effectively hemostatic or leak-proof, since it grasps and compresses only a small segment of each edge. The through and through interrupted Lembert and Halstead mattress stitches are also used in this connection by many surgeons. They are efficient in coaptation and inversion but lack hemostatic qualities because they do not compress the edges. The baseball stitch tends to expose some of the mucosa held in its grasp which cannot be inverted properly. Many experienced surgeons attempt to overcome and correct the shortcomings of the continuous suture

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by resorting to devices such as placing an occasional interrupted suture for security; Bickham[1] said it is well to tie at several points (without intermitting the stitch) to do away with any possibility of the suture acting as a drawstring and constricting the opening, and Horsley[5] recommended taking a back stitch at every third stitch to lock the suture line. I have for a long time used such devices, but have finally become convinced that it was possible to devise a continuous suture having all the necessary qualities by systematically utilizing the principle of reversing and crossing, and have evolved such a suture. I believe that this suture combines the two essential principles suggested by Moynihan[7b]—simplicity and safety.

CONTINUOUS REVERSE-CROSSED SUTURE

The continuous reverse-crossed suture is designed mainly for the inner through and through suture in gastro-intestinal anastomosis or entero-anastomosis and closure or repair of the stomach or intestines. Its purpose is to afford a high degree of safety, good hemostasis, accurate coaptation and inversion, protection of the seromuscular sutures and protection against leakage, to minimize tissue strangulation and necrosis and to induce better healing and minimum scar and ring contraction.

It is a continuous suture in which every other loop is reversed. This process of advancing and reversing forms a series of alternating forward and reverse loops which cross each other (fig. 1). For the purpose of description, the combination of two such alternating loops with their crossing limbs is called a suture unit. The distance between the two loops is about the length of the combined thicknesses of the tissues included. The latter are thus held between the opposing loops and their crossed limbs, equalizing the pressure in all directions. Suture units are connected by the advancing forward limb, which gives a small amount of slack, for expansion of the suture, thus allowing for tissue swelling. The limbs cross always on the mucosa side, while only a short section of each loop shows on the serosa side. The opposing tensions of the forward and reverse loops with their crossing members give support and stability to the suture unit, producing an equalized compression of the tissues within its grasp. The units are continuous, the advancing limbs connecting the units and forming the forward loop of the next suture unit. The units are placed closely together so that all the tissues of the full length and thickness of the suture line are incorporated.

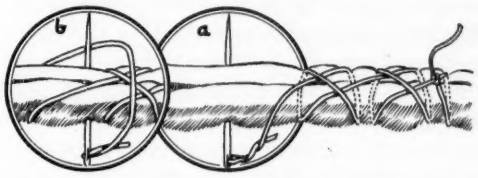

FIG 1. The reverse-crossed stitch as used for the inner through and through suture. The suture unit: *a*, forming the forward loop. *b*, the forward loop in place; forming and locking the reverse loop.

Advantages. Because of its architecture, this suture is better able to withstand the varying stresses and strains of filling and emptying of the viscera by fluids and gases, thus protecting the seromuscular sutures from exposure and from tearing out by sheer pull of heavy fluid-filled loops of bowel. Because the loops of each unit oppose and cross each other, damage or even a break in one loop will not have a disastrous effect on the whole suture line. Because the tissues held within the suture unit are equally compressed from all sides, there is less danger of tissue necrosis and cutting out than there would be when tissues are held tightly within a circular loop. There is also little danger of blood vessels slipping out of the grasp of the suture. While a running suture is likely to shirr or

tighten at one end while loosening at the other when subjected to unequal pulls or stresses, this cannot happen to the reverse-crossed suture, because each reverse loop defeats this tendency and therefore stabilizes the suture line. This suture cannot be said to be rigid, since there is some degree of slack in the connecting limb of the forward loop, thus allowing for some tissue swelling within the suture unit. Because this suture maintains accurate approximation, induces good hemostasis and minimizes tissue necrosis, there should be a minimum of scar and ring contraction.

TECHNIC IN GASTRO-ENTEROSTOMY

The approximating seromuscular suture used in gastro-enterostomy is my continuous oblique-right angle suture

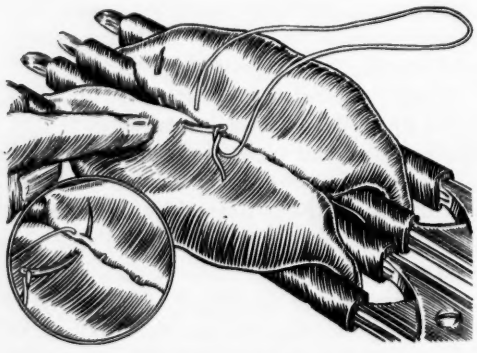

FIG. 2. The continuous oblique-right angle seromuscular suture. The bite of the needle is here exaggerated to show continuity. The insert shows the backstitch used to lock every third stitch.

(fig. 2 and fig. 6 *a* and *b*). It is formed by piercing the seromuscular coats of the two viscera in an oblique direction with one thrust—from the operator's side diagonally across to the opposite side. The needle is then brought directly across to the operator's side at a right angle to the suture line and again thrust into the tissues obliquely across the surfaces of both viscera, emerging on the far side. Again the needle crosses to the near side at a right angle, piercing and progressing through the seromuscular coats of both viscera. As the sutures are made, they are tightened. The third stitch is reversed a third to a half suture length and thus forms a figure X, locking the preceding line of suture. The suture is then completed. It appears as an even line without puckerings and with hardly a suggestion of exposed suture material. The distance between sutures is about ⅛ inch (0.3 cm.). The suture line thus produced is essentially similar to that of Cushing's[8] right angle suture, but it is more easily applied, takes less time and produces no puckering. After the incisions are made, the edges are trimmed and the bleeding vessels are ligated. Then the posterior layer of the inner through and through suture is begun by securing and tying the angles at one end of the incised viscera. The needle is advanced the length of a proposed suture unit, piercing the suture line from the operator's side straight through to the opposite side, forming the forward loop. The direction of the suture is then reversed by bringing the needle back to a point close to the tying loop at the beginning of the suture unit, piercing the tissues from the operator's side, the needle emerging directly on the opposite side, where the suture limb is locked under its own loop. This forms the reverse loop. The forward loop of the next suture unit is then formed, and the reverse loop is placed and locked, forming another equally spaced suture unit. The suture is continued by forming similar suture units between forward and reverse loops, the latter being locked (fig. 3). When the angle is reached, it is cleared in the usual way. After clearing the angle, the anterior layer of the through and through suture begins (fig. 4). It is essentially the same stitch as in the posterior layer, but it is placed in an inverted manner with the crosses on the mucosa inside the lumen (fig. 4*c*) and only segments of the loops showing on the serosa aspect. The edges are

held together horizontally; the needle emerges from within opposite the oper-

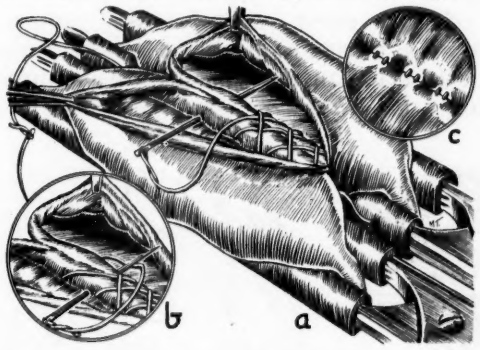

FIG. 3. *a*, posterior layer of the inner through and through suture, the needle forming the forward loop. *b*, the needle forming and locking the reverse loop. *c*, appearance of the suture line on the serosa aspect.

ator, one space forward of the angle loop. It is then brought directly across to the operator's side, where it pierces the near edge, entering the lumen, thus forming the first forward loop. The direction of the needle is then reversed, the needle traveling within the lumen diagonally across and backward toward

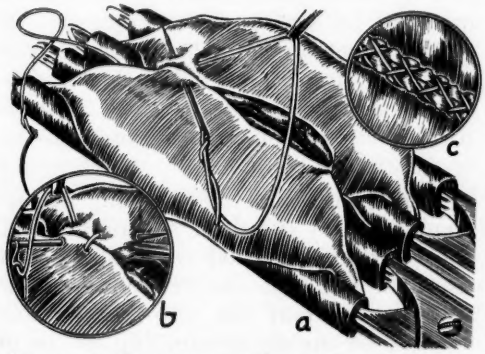

FIG. 4. Anterior layer of the continuous reverse-crossed through and through suture. *a*, the suture emerging from within forming the forward loop, the direction of the needle reversed to form the reverse loop. *b*, the needle completing the reverse loop and advancing within to form the next forward loop. *c*, appearance on the mucosa aspect.

the far edge, emerging close to the angle loop (fig. 4*a*). The needle is again returned to the near side directly opposite the point of emergence, piercing the near edge and thus forming the first reverse loop. It then advances diagonally to the far side the full length of the next suture unit, forming its forward loop (fig. 4*b*). As the loops are

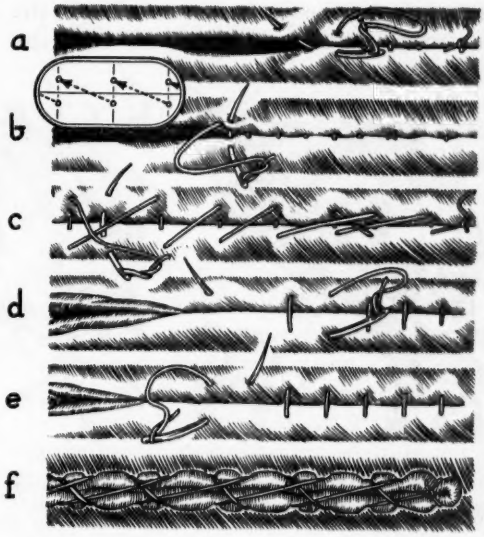

FIG. 5. Diagrammatic descriptions and modifications. *a*, oblique-right angle stitch—progress of the needle through the seromuscularis. *b*, same stitch as shown in *a*, with the needle in the position of reverse-locking. The insert shows the direction of the needle through the tissues. *c*, reverse-lock applied to Lembert's stitch. (The stitch here is not tightened to show the technic.) Note the long, exposed connecting limbs in comparison with *a* and *b*. *d*, modification of the inverted reverse-crossed suture for fascia approximation, the suture forming the reverse loop when tightened, the needle in position for the forward loop. *e*, suture forming the forward loop, the needle in position for the reverse loop. *f*, under surface of the approximated fascia. Note that the knots and practically all the suture material are on the under surface. The suture line is thoroughly locked by crossing members, the long limbs acting as relaxation sutures.

placed they are tightened and the edges inverted with a forceps. The suture units continue to the starting point of the posterior suture line, where the ends are tied in the usual way. The seromuscular suture is then completed and locked by reversing every third stitch. The angles are reenforced by interrupted Lembert sutures.

The suture when correctly placed should have the crosses and advancing loops, representing the greater part of the suture material, on the lumen side,

while the short connecting lines, representing a short length of each loop, should be visible on the serosa aspect. This makes it necessary to place the sutures of the posterior wall of the stoma in a gastro-enterostomy with the stitch with the lock; *c* illustrates Lembert's suture with an interval lock.

The inverted reverse-crossed suture may be adopted for the approximation of fascia planes by placing the suture units farther apart (fig. 5*d*, *e* and *f*).

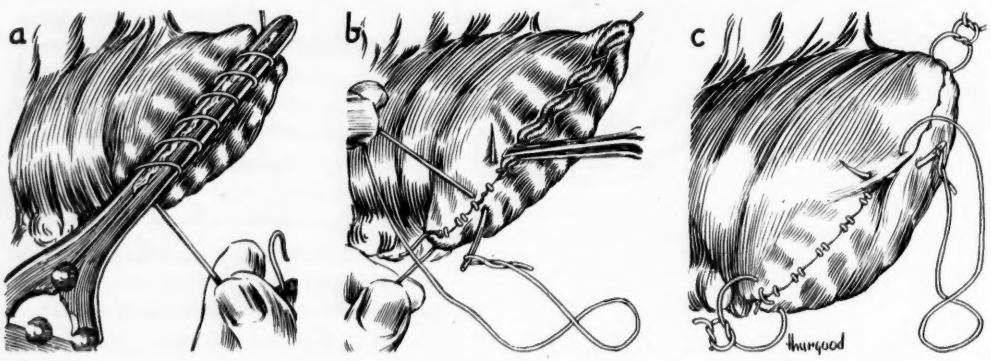

FIG. 6. Closure of duodenal stump. *a*, running suture over the clamp. *b*, the clamp removed, the suture made taut and held as a guide and the inverted reverse-cross stitch being placed over the guide suture. When completed, the respective ends of the two sutures are tied together. *c*, the reverse-crossed through and through suture in place and partly covered by the oblique-right angle seromuscular suture. Corners are reenforced with interrupted Lembert stitches.

crosses showing and the loops behind; while, after turning the corner, the suture is inverted, the crosses being within and under on the mucosa side and the loop lines showing anteriorly on the serosa side. As each loop is placed, it is tightened by the operator with his fingers, as instruments may damage the suture material; the connecting limb is held taut but not very tightly so as to allow a small amount of slack. Inversion is accomplished while tightening loops. The spacing depends on the thickness of the tissues. Ordinarily the suture unit should be about the length of the combined thicknesses of the two edges; the distance between units should be about one fourth the length of a suture unit.

OTHER USES AND MODIFICATIONS

A reverse loop may be placed at every third or more stitch in other forms of sero-muscular suture. Figure 5*a* and *b* shows the author's oblique-right angle

This makes a substantial coaptation, placing the knots and most of the suture material on the under surface of the fascia, where absorption is better and the blood supply richer than in the subcutaneous tissues, lessening the chances for infection from catgut and abscess from stitches.

End-to-end anastomosis may be accomplished by the three section method, the overhand method of suture being used for the first two sections and the inverted method for the last section. Closure of the duodenum (fig. 6) or of any bowel stump or of the sectioned stomach may be done by placing a running suture loosely over the clamp, removing the clamp and making the ends of the running suture taut. (The interior may be explored with the finger before the guide suture is tightened.) This straightened suture is used as a guide, the reverse-crossed suture being placed over it in an inverted manner and followed by a seromuscular line of su-

ture. The ends of the guide suture may be tied to the respective ends of the reverse-crossed suture.

SUMMARY

The author's continuous reverse-crossed suture is characterized by alternating forward and reverse loops the limbs of which cross and lock each other. It is placed overhand when sewing on the mucosa side and inverted when sewing from the serosa side. It incorporates the whole length and thickness of the edges with equalized compression. It is stable, yet not too rigid, being capable of some expansion allowing for tissue swelling. It is therefore a physiologic suture performing efficiently the functions of an inner through and through suture, namely, approximation, hemostasis, inversion, safety against leakage and protection of the seromuscular sutures. In addition, its continuity is not easily disrupted because of its alternating change in direction and self-locking. It is an all-purpose inner through and through suture and incorporates the two essential principles suggested by Moynahan—simplicity and safety. In its inverted form, this suture is well adapted to fascia suturing, placing most of the suture material as well as the knots under the fascia surface, thus lessening the probability and incidence of abscess.

The continuous oblique-right angle suture is devised to give a more even, unpuckered and quickly applied seromuscular suture line with practically all the suture material buried. It advances obliquely through the visceral surfaces with one needle thrust, then at right angles straight across, linking the two surfaces. By reverse-locking every third stitch, safety is added to its simplicity and ease of application.

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RÉSUMÉ

Une nouvelle méthode de suture gastro-intestinale

Le point de l'auteur est un point de couture ressemblant au point de boutonnière. Il est caracterisé par des anses alternantes, renversées et fixées. Ce surjet passe au-dessus de la muqueuse et rabat la séreuse. Il incorpore toute la longueur et toute l'épaisseur des bords par une compression uniforme, et permet une certaine expansion pour le gonflement des tissus. La suture oblique et à angle droit nous donne une ligne de suture unie et sans bourrelets. Elle est séro-musculaire et presque entièrement enfouié. En renversant et fixant chaque troisième point on ajoute la sûreté à la simplicite et à la facilité d'éxécution de la méthode.

ZUSAMMENFASSUNG

Eine neue Methode für Gastro-Intestinalnähte

Der Autor beschreibt eine fortlaufende Retour-Kreuzstichmethode, die durch abwechselnd vor-und rückwärts geknüpfte Knoten charakterisiert wird. Sie kommt beim Nähen der Mucosaseite nach oben zu liegen und ist beim nähen der Serosa umgedreht. Die volle Länge und Dicke der Wundränder ist mit gleicher Kompression inbegriffen und erlaubt so einige Ausdehnung für Gewebsschwellung. Die fortlaufende schief-rechtwinklige Naht gibt eine glatte und schnell anzufertigende

Nahtlinie, bei der nahezu das ganze Nahtmaterial unter der Oberfläche liegt. Durch Rückknotens jedes dritten Stiches wird die Sicherheit grösser und ebenso die Einfachheit.

RIASSUNTO

Un metodo nuovo per suture gastro-intestinali

L'autore descrive una sutura continua, ritorno-incrociata che è caratterizzata da nodi destri e sinistri alternati. Questa sutura comprende tutta la lunghezza e tutto lo spessore della ferite operatoria con compressione eguale dei margini permettendo cosi un'espansione per la tumefazione dei tessuti. La sutura continua ad angolo retto una sutura seromuscolare di bell'aspetto che è applicata rapidamente e tutto il materiale di sutura è practicalmente coperto della pelle. Annodando ogni terza sutura si aggiunge sicurezza alla semplicità e facilità di applicazione.

SUMARIO

Un método nuevo de sutura gastro-intestinal

La sutura contínua reversa-crusada del autor está caracterizada por la alternación hacia adelante y atras de puntos entrelazados. Este es colocado encima cuando se cose en lado de la mucosa é invertido cuando se cose del lado de la serosa. Este incorpora toda la longitud y espesor de el borde con presión igualada, permitiendo alguna expasión para la inflamación de los tejídos. La sutura continua oblicua-angulo-recto da una costura pareja, facil de aplicar con una sutura seromuscular en la cual el material queda casi completamente cubierto. Cuando se entrelaza y reversa cada tercer punto, seguridad es añadida á su facilidad y simplicidad de aplicación.

Dr. R. A. Gutmann, consulting physician for gastro-enterology in **Professor Gosset's** surgical clinic at the Salpêtrière, has solved a method of early diagnosis of carcinoma of the stomach by correlation of clinical study, therapeutic tests and roentgenographic evidence. In his recently published book he reports cases in which the surgeon at operation could palpate nothing abnormal and hardly anything abnormal could be seen on the open viscus by the naked eyę, but microscopic examination alone proved the diagnosis. **Professor Gosset** claims in the preface that this work is the first to be published on the initial phases of gastric ulcer.

The Royal College of Surgeons, England, has awarded the John Tomes prize for 1936-1938 to **Dr. Arthur Bullerd,** for his researches into the bacteriology of the mouth. **Professor Ernst W. Hey-Groves** has been appointed Moynihan lecturer for the current year.

At the Milwaukee meeting of the American Neisserian Medical Society, which met in conjunction with the American Association for the Advancement of Science, the Francis Amory research award for 1940 was given to **Dr. P. S. Pelouze,** assistant professor of urology, the University of Pennsylvania School of Medicine.

EXTRAPERITONEAL ONE STAGE RESECTION OF THE COLON

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RESECTION of the colon, especially of its left portion, still belongs to the unsolved problems of surgery. By improving the instruments and the technic of suturing and especially by proper choice of patients to be operated on, the mortality of this operation has been reduced from between 50 and 60 per cent, as reported forty years ago, to between 25 and 30 per cent. But even the recent procedures in use are not likely to increase the percentage of favorable results.

All surgeons are agreed that there is an essential difference between the comparatively harmless resection of the right portion of the colon and the dangerous resection of the left portion. In this paper a procedure is described for the hitherto much dreaded resection of the left portion of the colon. This method has only recently been so completely developed that it may be regarded as harmless and able to be generally recommended.

Even when a young surgeon I was impressed by the high mortality following resection of the colon. I then tried to obtain better results by improving the instruments and the technic of the so-called "aseptic suture of the intestine" (1908-1912). Many of the instruments then used by me are now, in a more or less changed form, in use among the surgeons of today. The problem of aseptic operations on the stomach and the intestines was later taken up by Hartert[8] and recently by Starlinger.[14] These authors clamp up a fold of each intestine and suture them together without opening them. The method is satisfactory, but cannot be universally used because the instruments needed are expensive and not all hospitals can afford them.

Besides, experience has taught that, for operations on the stomach and the proximal portion of the intestine, the preventive measures usually resorted to (e. g., tightening with compresses and frequent change of gloves) guarantee good results. When resecting the distal portion of the colon, however, a simple technic cannot prevent peritonitis, as long as one operates with an open peritoneal cavity and, after suturing, reposits the colon.

For postoperative peritonitis is caused not so much by lack of technical skill as by permitting contamination from the intestine. If the anastomosis is effected between the ileum and the colon, the suture is washed by noninfectious contents. But if one creates an anastomosis between two portions of the colon the suture line is invaded by virulent micro-organisms of the colon, and in the case of ulcerated carcinoma mostly by anaerobic organisms. There results first a putrefying necrosis of the borders of the suture of the mucous membrane. Then the infection spreads quickly to the peritoneum. The accuracy of this statement is confirmed by the fact that the results of the resection of the colon are considerably improved whenever a colostomy is done previously. In this way the intestine can be cleared before resection, and the danger of infection is reduced, although not entirely removed. By following this method the most experienced surgeons were able to reduce the mortality to approximately 20 per cent; i. e., every fifth patient died.

This method, recommended by Schloffer,[12] of Prague, has the inconvenience that the patient must be subjected to three operations: (1) colostomy, (2) resection of the colon and (3) closure of

the stoma of the colon. The procedure is improperly called a three stage resection of the colon. This term is a misnomer, for the actual resection of the colon (i. e., the second of the three operations) is performed in the same manner as the one stage resection of the colon, with the peritoneal cavity open. Thus the patient is still exposed to the danger of peritonitis, in addition to all the inconveniences of a fistula coli lasting many months.

METHODS OF EXTRAPERITONEAL RESECTION

Many unfortunate experiences taught me that real progress was not to be expected until the resection with the open peritoneal cavity could on principle be avoided by procedures in which the detached portion of the colon is exteriorized and resected later on. Such operations were occasionally performed if the patient was very weak and an operation requiring more time seemed too drastic. Studgaard, Bloch, Hahn, and Hochenegg[4] have recorded methods to accomplish this end, but it was von Mikulicz[5] who developed the procedure so completely that it could be recommended as the only and typical operation for carcinoma coli. Von Mikulicz at that time was not aware that similar suggestions had already been made by von Heineke and Paul. A historical survey is to be found in an article by Anschütz (1907).[1]

The essential improvement for which von Mikulicz was responsible is the following: The portion of the colon to be resected is not only placed outside of the abdomen but is also prepared for the anastomosis by suturing together the portions of the colon above and below the stenosis. The result is a double tube, which von Mikulicz called *Doppelflinte* (double-barreled shotgun). The abdominal wall is then tightly closed about the exteriorized colon. This can then be resected presently or later on. There results an anus praeternaturalis with two openings. After some days the partition wall between the two intestines, called by German authors *Sporn* (spur), can be removed by crushing it with a forceps so that the two tubes will be united. There results one opening, which can be closed later.

At the Thirty-first Meeting of the German Society of Surgeons in Berlin in 1902, von Mikulicz reported on sixteen patients so treated, with a mortality of 12.5 per cent, a result more favorable than any achieved up to that time. Before the same society in 1920 I was able to report eight cases of resection of the left portion of the colon, in all of which the operation was accomplished up to the closure of the anus praeternaturalis. One patient died from cardiac failure within the first twenty-four hours after the extraposition.

But not all German surgeons were successful in using the new method. Nordmann,[7] in a very circumspect report on surgery of the colon at the Berlin meeting in 1926, reported on one hundred and forty-four patients operated on according to the method of von Mikulicz (so-called two stage resection of the colon) by different surgeons, with a mortality of 28 per cent. This was just as high a percentage as was then usual with the one stage resection. Nordmann reached the conclusion that the one stage resection of the colon must be regarded then, as before, as the ideal and best method.

Nevertheless I myself continued to use the method of von Mikulicz. In my opinion, many surgeons obtained poor results because they did not perform this procedure* as cautiously as necessary. Especially the crushing of the "spur" seems to be a serious obstacle to many surgeons. Fatal incidents were reported, e. g., the inclusion of a neighboring portion of small intestine or of the mesocolon of the "double-barreled

* This method has been more exactly described by Anschütz (1907).[1]

shotgun." In 1920 I described a procedure which definitely prevents such calamities. But there are other disadvantages. For this reason most surgeons rarely use the so-called two stage resection of von Mikulicz. My expectation that his procedure would be accepted as the only method to be used was not nearly realized.

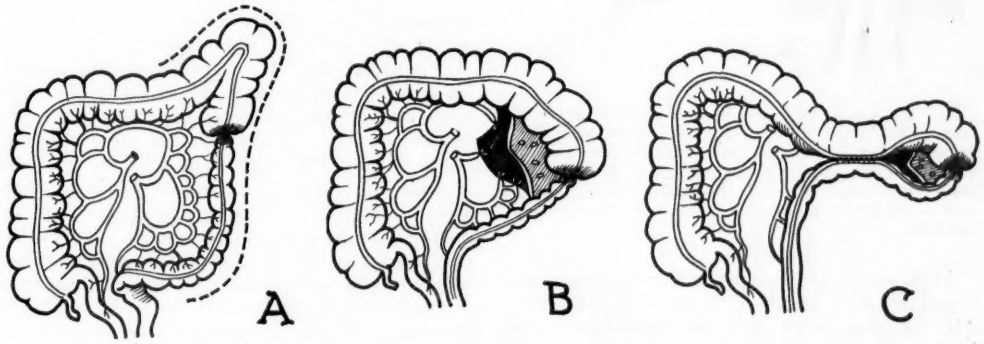

FIG. 1. In *A* the dotted line indicates the extension of detachment in a case of carcinoma coli descendentis. *B* shows the colon and mesocolon detached, with the vessels ligated. In *C* a "double-barreled shotgun" has been formed. Note the adjustment of the taeniae.

The most important objection is that the patient for a long time must suffer the disadvantage of the anus praenaturalis, and that this must be closed by a second operation, which is not entirely without danger and is therefore often omitted. I endeavored to limit the time needed for treatment and to make the second operation superfluous (1935, 1936).[6b, c] As the technic of the procedure is not generally known and success depends on the strictest consideration of many particulars, I shall describe the procedure exactly as developed by myself, stressing first the essentials to be observed in the von Mikulicz operation.

VON MIKULICZ PROCEDURE

Detachment of Extensive Portions of the Colon. The late Friedrich, of Königsberg, showed the necessity of resecting not only the diseased portion of the colon, together with its mesocolon, but much greater portions of bowel above and below the tumor. This is to be particularly observed in exteriorization of the colon. Some authors (Finsterer,[2] Porges[9]) believe that the exteriorization is possible only for the movable portions of the colon, such as the colon transversum and colon sigmoideum. But this opinion is wrong. Every portion of the colon, and therefore, for example, the colon descendens, can be detached from the posterior wall of the abdomen and exteriorized. The blood vessels of the kidney, the spermatic vessels and the ureter must be carefully isolated. Figure 1*A* shows the procedure in one of my latest operations. There was a carcinoma coli descendentis stenosans. The dotted line in the diagram indicates that in such a case the colon must be detached from the middle of the colon transversum and united with the flexura sigmoidea. The ligamenta (gastrocolicum, phrenicocolicum) and the typical lateral adhesions are divided. The mesocolon is to be detached far beyond the palpable lymph nodes. The ligature of the corresponding branches of the arteriae mesentericae deprives a large portion of the colon of blood supply, another reason for detaching more distal portions of the colon in order to have at one's disposal a well nourished colon for the anastomosis (fig. 1*B*).

Formation of the Doppelflinte (Double-Barreled Shotgun). Only such parts of the colon as are well supplied with blood are suitable for anastomosis. One determines such suitability by slightly scratching the serosa of the colon. A good blood supply is shown by the issuing of light red blood. The two segments of intestine must be correctly adjusted, not in an oblique but in a strictly parallel position, and sutured together along the proper line. As early as 1920 I suggested turning the two intestinal segments toward each other so that the portion of the circumference most

distal from the mesentery might be sutured. In this way, when, later, the spur is to be crushed, the mesocolon cannot be damaged (fig. 1*C* and 3*B*).

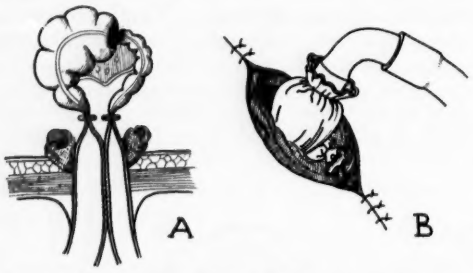

FIG. 2. In *A* the portion of the colon to be resected has been exteriorized, the peritoneum and muscles have been fixed by suture to the intestine, and the subcutaneous tissue has been tamponed. *B* shows the colon resected, the distal opening ligated and a Mixter's glass tube tied into the proximal opening.

It is important to suture the two intestinal segments at a length of at least 3 3/10 inches (10 cm.) in order that the anastomosis may be wide enough and a narrowing by scar shrinkage is rendered impossible. As the forceps is shorter than the suture, it is impossible to involve any portion of intestine near the area of crushing (fig. 3*B*). I recommend wrapping the two intestinal segments in a portion of the omentum, if possible, or, if this is not possible, detaching the borders of the peritoneum and suturing them at the deepest point of the *Doppelflinte* (fig. 2*A*) so that this is located altogether extraperitoneally. An experienced surgeon knows that a gap between the fixed colon and the lateral wall of the abdomen must be avoided. The colon should be attached by some sutures to prevent an incarceration of the ileum.

Figure 2*A* shows a carcinoma lying outside the abdomen, with the double tube within the integumentum abdominis. It is to be emphasized that, as von Mikulicz already has stated, the colon must lie outside the abdomen without any tension.

The edges of the peritoneum and of the muscles must be sutured around and snugly fixed to the extraposed colon, but not too tightly, lest the extraposed intestine be compressed. Formerly I also stitched up the skin, as all surgeons do, with the intention of preventing an infection of subcutaneous tissue and eventually of the peritoneum. But nowadays I suture only the peritoneum and the muscles, and these quite tightly; the skin is sutured only as shown in figure 2*B*. All around the extraposed colon the subcutaneous tissue is tamponed with iodoform gauze. Thus coalescence of the skin with the colon is purposely prevented. The reason for this procedure will be explained in the following section.

Resection of the Extraposed Colon Immediately After Closure of the Abdomen. Formerly surgeons did not trouble much about preparing the extraposed colon; they exteriorized it in some way or other and closed the remaining portion of the wound. After some days the extraposed colon became necrotic. Suppuration and stench forced them to resect it. And in some clinics (Porges,[9] Hochenegg,[4] Schmieden,[13] Reichel and Staemmler[10]) the opinion still prevails that the extraposed colon should be cut only after some days, when the peritoneum has joined the colon. But one must remember that the exteriorized portion of the colon is not well nourished and therefore in a state in which putrefactive processes prevail. The patient is thus endangered by resorption of toxins and, I believe, also by the continuous strain on the mesenteries, producing a shock. Suppuration may also spread onto the peritoneum and cause peritonitis. All this can easily be prevented by immediate resection of the colon. At a proper distance from the carcinoma the colon is clamped and cut with the Paquelin cautery. Two openings result. The distal one is instantly ligated; into the proximal opening is fixed a Mixter's glass tube lengthened by a rubber tube so that one can at once empty the colon by lavage. All this can be done without soiling the wound. On the following days also lavage is done. The glass tube holds firmly for three or four days; if necessary, it is tied once more. Von Mikulicz covered the skin suture with zinc ointment. I cover the area surrounding the wound with layers of gauze fixed on the skin with mastisol. The top layers of the gauze are changed whenever necessary; the deeper ones, especially the iodoform gauze, remain undisturbed for some days. When, on the fifth day, one changes the iodoform gauze, one finds the two intestinal tubes surrounded by a trough-like area covered with granulations (fig. 3*G*). This space is washed once a day with solution of hydrogen peroxide and then loosely filled with iodoform gauze. There is only a slight exudation, and one can rely on the peritoneal suture remaining tight by adhesions. These adhesions are supported by the iodoform gauze tampon.

Early Crushing of the Spur. At the clinics of von Mikulicz and Rotter surgeons began to crush the spur after two to three weeks. I endeavor to start this as soon as possible. As early as five days after operation the general condition of the patient and the state of the

wound permit the crushing of the spur. Within this time the colon is ordinarily emptied from stool by lavage. Tincture of opium is given and the crushing clamp (fig. 3*A*) applied on the spur. I introduce a forefinger into each of the two openings of the colon and ascertain by palpation where the two tubes touch most closely. Along this line the blades of the clamp are put on in each intestine, then locked together by applying a rubber band on the notches at the handles of the clamp (fig. 3*B*). The clamp must be introduced so deeply that later the communication between the two tubes may become sufficiently wide that one need not crush again. The effect of the pressure is strongest at the end of the clamp. Here one finds a communication as early as forty-eight to seventy-two hours after operation. Then one inserts an artery forceps through the opening, removes the crushing clamp and introduces a rubber loop through the opening. This is bent round the remnants of the spur and tied tightly (fig. 3*C*). Within twenty-four hours the spur becomes necrotic and can be cut through with scissors. The necrotic borders of the tissue are painted with tincture of iodine. From eight to ten days after the resection there exists a broad communication between the two intestines, and soon stool passes and is expelled per anum. This event is appreciated by the patient as a symptom of speedy recovery.

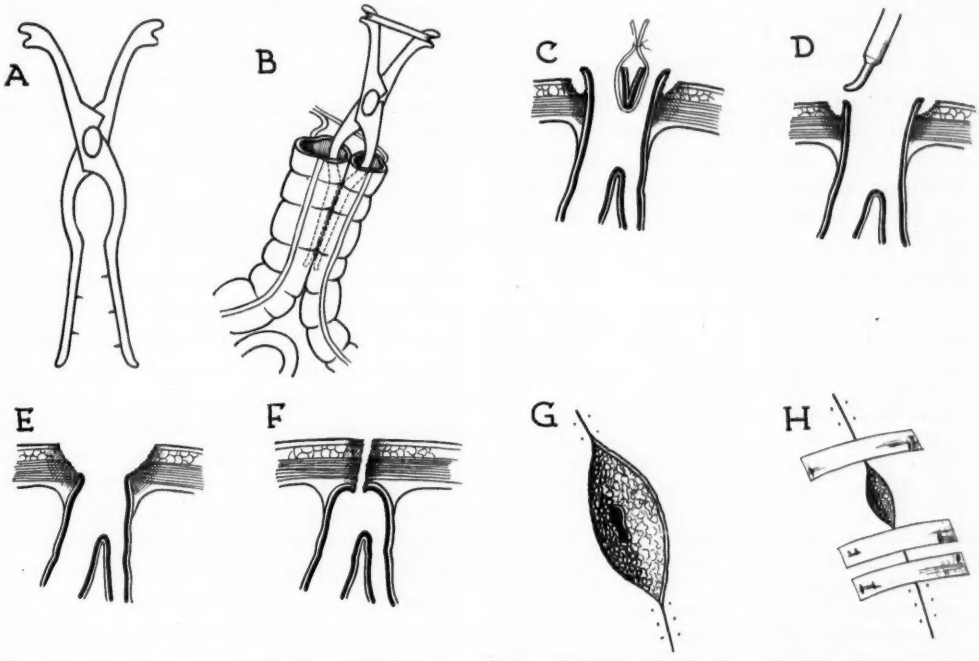

FIG. 3. *A*, squeezing clamp of the type used by von Mikulicz. *B*, squeezing clamp put on "spur." Note the averted position of the mesocolon, as well as the neighboring portion of the ileum out of danger. C shows the remaining portion of the spur tied with a rubber loop. Note the troughlike area around the stoma. *D* shows the borders of the mucous membrane being cauterized. In *E* the stoma has slipped down, and the peritoneum is secured by adhesions. *F* shows the fistula narrowed by shrinking. *G*, appearance of the wound after fourteen days; *H*, appearance after twenty-four days.

Crushing produces no pain on lying down, and I never saw any damage caused by its use.

Closure of the Colostoma. The patients were usually dismissed from the hospital with the colostoma, and this was not closed until some months later. Every experienced surgeon knows that this second operation means renewed danger for the patient. Therefore it is delayed and often omitted. There are various procedures used for the closure of the stoma. Some surgeons detach the stoma totally from the integumentum abdominis and suture the two openings together, with an open peritoneal cavity. This, from the technical standpoint, seems to be the best and most exact procedure. But sometimes an infection of the peritoneum occurs, and some patients die after the second operation.

I therefore have preferred the extraperitoneal closure of the stoma, and in 1920 de-

scribed my method. But, as the adhesive quality of the serosa is lacking with this method, the suture, even when made in three layers, is not entirely reliable. A fistula often develops, which, however, regularly closes by itself after some days.

AUTHOR'S OPERATION

Up to this point I have described all the particulars which, it seems to me, are essential in an exactly performed von Mikulicz operation. Now I shall state my own procedure, which is intended to make the operative closure of the stoma superfluous.

As I have shown in 1935 and 1936,[6b, c] the everted borders of the mucous membrane shrink and become inverted when cauterized with the Paquelin cautery (fig. 3*D*).† One starts cauterization as early as possible, on the average, a fortnight after resection. The patients leave the hospital with the stoma shrinking. Once a week they come to the polyclinic service, and on that occasion the borders of the mucosa are cauterized again. Soon the stoma becomes so narrow that a finger can scarcely be introduced. I was struck by the observation that the shrinking of the stoma was more rapid at the beginning, as long as the mucosa had not yet grown together with the skin. When, later on, the stoma was surrounded by callous skin borders, the shrinking became slower.‡ I determined to prevent the coalescence of the mucosa with the skin in the next case by tamponade of the subcutaneous tissue (fig. 2). The effect of this measure was astonishing. Ten days after the resection of the exteriorized colon, when the spur was already removed, the stoma, obviously drawn by the mesentery, sank into the depth of the wound (fig. 3*C*, *D* and *E*). Fourteen days after resection the wound resembled that shown in figure 3*G*. At the bottom of a granulating funnel was to be seen a narrow opening of the colon. As soon as an ectropion of the mucosa was formed, the edges of the mucosa were cauterized. The fistula coli became quickly smaller and at last closed by itself (figs. 3*F* and *H*). The rapidity of this occurrence was surprising. On the twenty-fourth day after operation a finger could scarcely be introduced; a month later, a stick of silver nitrate just passed through. Within another month the fistula had closed. The treatment of such fistulae coli is, of course, difficult. One can promote spontaneous closure by cauterization with the Paquelin cautery, with the area under local anesthesia. The following regimen is helpful: One begins with thorough purgation. Then one prescribes a liquid diet (soup, tea, coffee with whipped cream, lemonade with much sugar) for three or four days and then a pap diet (rice, porridge, eggs, minced ham, toast, butter) for a week. Fruit, jam and vegetables are forbidden. This regimen can, after an intercalation of a normal diet for a week, be repeated, if necessary. The patients willingly take to this drastic diet, as they feel their fistulas rapidly becoming dry and smaller.

Comment. The procedure just described represents a modified method of resection of the colon with extraposition. The time required for the exteriorization itself has been reduced to a fraction of the time needed with other methods, as the exteriorized colon is immediately resected. Thus one can hardly call this a "resection with extraposition" any longer. Neither is the usual term "two stage resection of the colon" adequate, because the closure of the stoma has been made superfluous by cauterizing the edges of the mucosa. One can speak of only one operation. The crushing of the spur and the thermocauterization are special features of after-treatment. This, then, entitles one to speak of the procedure as an "extraperitoneal one stage resection of the colon."

As the resection itself is made entirely extraperitoneal, the danger of the operation is reduced to a minimum. By the rapid succession of the crushing of the spur and the cauterization the period of after-treatment is greatly reduced. The patient need stay in the hospital only from fourteen to sixteen days; the rest of the treatment is ambulatory. After two months the fistula coli hardly incommodes the patient, because it has dwindled to almost nothing.

The method here described requires

† The diathermic cauterizer has not the same effect.

‡ My case 3 was very instructive. The patient had been operated on by another surgeon four months previously. He resected a portion of the colon sigmoideum by extraposition but had not closed the two openings of the colostoma. I crushed the spur and tried my method of cauterization. But the mucous membrane did not shrink until I detached it from the skin with the scalpel.

the most minute attention to details and may impress some, perhaps, as too exacting. For that reason many surgeons prefer the attempt to improve the one stage resection. But, as mentioned before, all such attempts will always be accomplished by a high mortality. Single successful cases must not deceive one. It must be understood that it is not the skill of the surgeon that is relevant; the result depends only on the virulence of the microbes of the colon. This is why one should choose the extraperitoneal procedure, which is painstaking but safe. There will be few fatal events in any series, as these will occur only in the case of patients who are elderly or who are suffering from disease of the heart, kidney or liver. The detachment of large portions of the colon and the extraposition are a severe strain on a weak organism, although one reduces the shock by local anesthesia. In the state of intestinal obstruction, extraposition of the colon is contraindicated.

The technic of thermocauterization to avoid the operative closure of the colostoma was developed by me in four four cases. I should like to have reports on this procedure carried out in a large clinic in a larger number of cases.

REPORT OF CASES

Case 1. A woman aged 44, whose father had died of carcinoma coli, had always been obstipated and lately had severe colic. On Dec. 25, 1934, there were abdominal pains and retching. The physicians gave morphia and belladonna, without effect. I found visible peristalsis and urged an operation. As the general condition was good, the patient was operated on two hours later, with narcosis induced by ether, a median incision being used. Marked narrowing of the colon descendens by carcinoma was found; the lymph glands were not visible. The colon was detached from the middle of the colon transversum and sutured onto the flexura sigmoidea. A "double-barreled shotgun" was formed, and the colon was extraposed; the integumentum abdominia was sutured, and the colon was resected. The colon was then washed

On December 29 a squeezing clamp was put on the spur. The next day the clamp was removed, and an elastic loop was put on. The following day the spur was gone.

On Jan. 4, 1935, the superfluous portions of the extraposed colon were removed with the Paquelin cautery. On January 8 the borders of the mucosa were cauterized. On January 14 the colostoma was 1 inch (2.54 cm.) wide. A squeezing clamp was put on again. Three days later the clamp had fallen off; cauterization was done.

On February 2 the wound had become very small, and the mucous membrane was no longer visible. On March 10 the fistula was 1/5 inch (0.5 cm.) wide. On March 16 operative closure of the small fistula was carried out, with the area under local anesthesia. The mucous membrane was detached from the skin and twisted down, and the colon was sutured. The layer of fat was sutured, and the skin was stitched up. Healing was per primam intentionem.

On April 5 a radical operation for ventral hernia was done. The patient was dismissed on April 13.

Case 2. A man aged 51 had no stool and no flatulence for three days; there were colic pains, and the abdomen was inflated. During colic, peristalsis of the cecum was visible. X rays showed levels of fluid in the regions of the cecum and flexura lienalis. The general condition was good. Operation was performed at midnight, Dec. 7, 1936. A median incision was made, with etherization. The cecum and colon were inflated to the thickness of a man's arm. The serosa burst alongside the taenia coli ascendentis. No further search for the site of obstruction was made. A fistula was made at the cecum.

On Jan. 14, 1937, x rays showed stenosis of the colon transversum just in front of the flexura lienalis. A second operation was performed, with etherization, with the fistula ceci covered with gauze. An oblique incision was made parallel to the left costal bend. The colon was detached from the middle of the colon transversum and sutured to the flexura sigmoidea. A "double-barreled shotgun" was formed and extraposition carried out.

On January 16 a squeezing clamp was put on the spur. Three days later the clamp was removed, and an elastic loop was laid around the remaining portion of the spur. On January 21 the spur had disappeared. The following day cauterization was carried out, and this was repeated on January 28, when there was a stool per anum. On January 30 both the fistula coeci and the fistula transversi were cauterized. On March 11 these fistulas were

fairly narrow, and by April 11 the fistula coeci had closed by itself.

The patient carried on his business and had no trouble with his small fistula, and only as late as Aug. 4, 1938, could be induced to have the fistula closed by suture, with the area under local anesthesia.

CASE 3. A woman aged 62 had been operated on four months previously by another surgeon on account of carcinoma flexurae sigmoideae, with extraposition of the colon. The "double-barreled shotgun" was incompletely formed: The two tubes were not parallel. At the patient's request I started preliminary measures for closing the anus praeternaturalis. This procedure was hampered by the adiposity of the patient, a hernia ventralis about the anus praeternaturalis, and the aforementioned oblique position of the two tubes of the intestines.

On April 25, 1938, a squeezing clamp was put on the spur, and this clamp was removed on April 29. On May 7 the colostoma was wide (measuring from 3 to 3½ inches [7.6 to 8.9 cm.]). Cauterization was done. On May 28 repeated cauterizations were carried out, without effect, as coalescence with the skin had proceeded too far. I determined to detach the mucous membrane from the skin, with the area under local anesthesia. After detachment, the mucous membrane and skin were sutured separately, by which procedure the aperture of the stoma was narrowed to 2 inches (5.08 cm.).

On June 24, after repeated cauterization, the stoma was narrowed to 1½ inches (3.8 cm.), but a new spur had lately arisen, due to shrinking of the scar. A squeezing clamp was put on in a different direction. By June 27 this had fallen off. By July 27, after repeated cauterizations, the fistula had shrunk to 7/10 inches (1.8 cm.), and by August 15 to 3/10 inches (0.8 cm.). On the latter date it was *closed by suture, with the area under local anesthesia.* The skin stitches were removed on August 24, and there was a stool per anum. On August 30 a small fistula intestini had formed. Laxatives and a liquid diet were prescribed. By September 15 the fistula had spontaneously closed.

CASE 4. A woman aged 62 had been treated for colitis for one and one-half years, with an apple diet. There had been no stool for a week. The abdomen was inflated, and there was a distinct peristalsis in the region corresponding to that of the colon ascendens and the colon transversum. Rectoscopy showed 8 inches (20.3 cm.) in a normal state. An x ray showed the barium clyster filling the colon up to the middle of the colon descendens. The general condition was good. Operation was indicated.

On May 14, 1938, with the area under local anesthesia, combined with etherization for some minutes, an oblique incision was made parallel to the left costal bend. The colon descendens was much narrowed by carcinoma, and there were several hard lymph glands in the mesocolon. The colon was detached from the middle of the colon transversum and sutured to the flexura sigmoidea, with formation of a "double-barreled shotgun," extraposition and suture of the integumentum abdominis, *excepting the skin.* The subcutaneous tissue was first tamponed with iodoform gauze. The extraposed colon was resected, and Mixter's glass tube was introduced. Immediate intestinal washing removed masses of thickened stool. Washing was carried out once a day on May 15, 16 and 17.

On May 18 tinctura opii was given, and the iodoform gauze was changed. On May 19 a squeezing clamp was put on the spur. This was removed two days later, and an elastic loop was adjusted. By May 22 the spur was gone, and there was a stool per anum. On May 26 the patient left her bed.

On May 30 the borders of mucosa were cauterized at the bottom of the funnel (fig. 3*D*). The patient left the hospital on June 7, with the wound considerably reduced under strips of adhesive plaster (fig. 3*H*). The fistula coli offered passage for one finger only. On June 22 cauterization was done once more. On July 26 the fistula just allowed passage of a stick of silver nitrate, and by August 8 it had spontaneously closed.

SUMMARY AND CONCLUSIONS

A method of resection of the colon has been described which (especially in the dangerous resections of the left portion of the colon) prevents peritonitis by the extraperitoneal procedure. It has been developed from von Mikulicz' procedure of resection of the colon with exteriorization, but differs from it in essential points. Extraposition is only part of the operation, requiring but a short time, and the resection follows immediately. The crushing of the spur of the so-called "double-barreled shotgun" is finished within the first week.

With this method an operation for closure of the stoma of the colon is

superfluous, as with cauterization of the borders of mucous membrane the fistula quickly narrows and finally closes spontaneously. This occurrence is essentially promoted if, by tamponing the subcutaneous tissue, coalescence between the mucosa of the stoma and the skin is prevented. In the state of intestinal obstruction the resection of the colon with exteriorization is contraindicated.

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RÉSUMÉ

Résection extra-péritonéale du côlon en un temps

Une méthode de résection, en un temps, du côlon, par voie extra-peritonéale, est décrite. Cette méthode prévient la péritonite si fréquente dans les résections du côlon descendant. Elle est un développement de la méthode de résection du côlon par extériorisation, préconisée par Mikulicz. Cette extériorisation n'est qu'un temps de l'opération. La résection suit immédiatement. L'écrasement de l'éperon en canon de fusil est accompli dans une semaine. Une opération pour fermer la fistule est superflue, car si on cauterise les bords de la muqueuse, la fistule se ferme spontanément en peu de temps. On peut hâter la fermeture en tamponnant le tissu sous-cutané. Dans les cas d'obstruction intestinale, la résection du côlon avec extériorisation est contre-indiquée.

ZUSAMMENFASSUNG

Extraperitoneale einzeitige Resektion des Colon

Eine Methode für die Resektion des Colon wird beschrieben, die (speziell in den gefährlichen Resektionen des linken Colon) durch extraperitonealem Vorgehen einer Peritonitis vorbeugt. Die Methode wurde aus der Miculicz'schen Exteriorisationsresektion des Colon entwickelt; die Resektion ist jedoch nur ein Teil der Operation der kurze Zeit in Anspruch nimmt und sofort von der Resektion gefolgt wird. Eine Operation für die Obliteration des Colostomas ist überflüssig, da nach Kauterisation der Mucosaränder die Fistel kleiner wird und sich schliesslich von selbst schliesst. Die Schliessung wird durch Tamponade beschleunigt. Bei Ileus ist die Exteriorisationsoperation kontraindiziert.

SUMARIO

Resección extraperitoneal del colon en un tiempo

Un método de resección del colon ha sido descrito el cual (especialmente en la resección peligrosa de la porción izquierda) preeviene peritonitis por el procedimiento extraperitoneal. Esta ha sido desarrollada de la resección con exteriorización de Mikulicz, pero exteriorización es solamente parte de la operación, requiriendo solamente un corto tiempo, y la resección sigue immediatamente. El aplastamiento de el "spur" ó el así llamado escopeta do dos cañones es terminado durante la pri-

mera semana. Una operación para el cierre de el colóstoma es superflua, pues cauterización de los bordes de la membrana mucosa estrecha la fístula con rapidez y finalmente la cierra expontaneamente. Este cierre es ayudado cuando se tapóna con gaza el espacio entre la membrana mucosa y el tejído subcutaneo evitando la coalescencia de la piel al colon. En los casos de obstrucción intestinal la resección del colon con exteriorización está contraindicada.

RIASSUNTO

Resezione extraperitoneale del colon in un tempo

Un metodo di resezione del colon è stato descritto, che (specialmente nelle resezioni pericolose del colon sinistro) previene peritonite mediante un metodo extraperitoneale. Questo metodo è stato sviluppato dalla resezione extraperitoneale del colon di Miculicz, ma la esteriorizazione è soltanto una parte dell'operazione inquantoche impiega soltanto poco tempo ed è seguita immediatamente dalla resezione. Un'operazione per chiudere il colostoma è superflua, perche la fistula si rimpiccolisce rapidamente e finalmente si chiude spontaneamente dopo cauterizazione delle margini della mucosa. La chiusura viene accelerata coll'uso di tamponi. In casi di ostruzione intestinale la resezione del colon con esteriorizazione è controindicata.

The Committee on Scientific Research of the American Medical Association has made grants to **Dr. Felix Saunders,** of the University of Chicago, for the continuation of studies on growth factors for bacteria; to **Drs. Hugh J. Morgan** and **George P. Vryonis,** of the School of Medicine of Vanderbilt University, for the study of bacterial infections in the chick embryo; to **Dr. William C. Langston** and **Dr. Paul L. Day,** of the School of Medicine of the University of Arkansas, to be used in their experiments on nutritional cytopenia in the monkey, and to **Dr. Marion Fay,** professor of physiological chemistry at the Woman's Medical College of Pennsylvania, for a continuation of experiments on the physiologic effects of strontium.

The Casselberry Prize of the American Laryngological Association, amounting to $500, has been divided between **Dr. Brien T. King,** of Seattle, for his operation to relieve abductor paralysis by use of the omohyoid muscle, and **Dr. Hermon Marshall Taylor,** of Jacksonville, Fla., for his film study of the hygiene of swimming.

The American Radium Society awarded its Janeway Medal for 1939 to **Gioacchino Failla, Sc.D.,** physicist to Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, at the annual meeting in St. Louis on May 15. **Dr. Failla** was at the time associated with Dr. Henry H. Janeway, for whom the medal is named.

OPERATIVE CHOLANGIOGRAPHY

ITS CONTRIBUTION TO THE KNOWLEDGE OF THE PHYSIOPATHOLOGY OF THE COMMON BILE DUCT*

DR. P. L. MIRIZZI, F.I.C.S.

CÓRDOBA, ARGENTINA

AT the third Argentine congress of surgery, in Buenos Aires in 1931, I called attention to the advantages of operative cholangiography in revealing the nature of obstruction in and the functional capacity of the bile passages. More recently, in a series of articles, I have reported the results of my study of the physiopathology of the hepatic and common ducts, the diagnosis of their pathologic states and the surgical procedures indicated in disease of the principal excretory duct.

METHOD

The delicacy of the walls of the common bile and hepatic ducts and their propensity to contract in the presence of any irritant, physical or chemical, demand the employment of an appropriate method, such that the factors that might influence the exact interpretation of the functional condition of the excretory passages are reduced to a minimum.

Operative cholangiography as I have developed it suppresses visualization of all foreign bodies in the hepatic and common bile ducts and respects the anatomic integrity of these ducts. Furthermore, slow injection of a small quantity of opaque substance avoids distention of the bile duct branches, and consequently spasmodic phenomena of the papilla are prevented, together with regurgitation along Wirsung's duct. A mechanically forced passage of the flow is also avoided by overflow through the ampulla of Vater.

The substance employed is lipiodol, with which a maximum of detail is obtained and which makes possible in the short time available during operation a study of the evacuation of the hepatic and common bile ducts. The quantity injected is 3 cc., on an average, administered at the rate of 1 cc. a minute through the cystic duct with an appropriate cannula the tip of which does not pass Heister's valves, in order that, as much as possible, all excessive pressure may be avoided—an object that can be attained only by extreme caution in view of the low secretory pressure of the biliary network. Naturally, when the injection is made into the gallbladder, 10 cc. of lipiodol is used after aspirating a similar quantity of bile.

For the sake of brevity I shall speak, first, of the *physiology of the hepatic duct;* second, of so-called *sphincteritis,* and, third, of *overlooked stones,* on the basis of knowledge gained from the systematic study of 600 cases of gallstones in which operation was performed and in which, without exception, operative cholangiography was practiced.

PHYSIOLOGY OF THE HEPATIC DUCT

The hepatic and common bile ducts, in synergic or antagonistic action with the sphincters, regulate the filling and emptying of the gallbladder so that functionally the main duct is inseparable from the accessory duct. From roentgenographic documentation obtained through operative cholangiography, from the physiologic point of view, the biliary tree is constituted of two excretory systems that act in harmony, thanks to the synergic action, either physiologic or anatomic, of the sphincters; the two systems are the hepatic system and the gallbladder-common bile duct system.

The first comprises the hepatic duct, its principal ramifications and the intraglandular branches; it is controlled by a physiologic sphincter which exercises its contractile action along the whole length of the hepatic duct.

According to the classic textbooks on physiology, the gallbladder fills passively in the intervals of digestion, owing to a temporary closing of the

* Read at the International Assembly of the International College of Surgeons, New York, May 22, 1939.

sphincter of Oddi. The biliary tract, when it reaches its maximum capacity, passes its contents again passively into the gallbladder. When investigated by operative cholangiography, the process appears entirely different. Roentgenographic studies during and immediately after the operation show that, when there is an incomplete obstruction, the biliary tree empties the remains of the lipiodol *actively* through the cysticoduodenostomy opening already formed.

Authors who have dealt with the physiology of the sphincters of the biliary tree limit themselves to the papilla of Vater and the neck of the gallbladder, the two points which seem to control the outlet and inlet of the bile in normal cases. No one, however, has mentioned the *contraction of the hepatic duct*. According to my observations in the great number of cases that I have studied, principally when there is some resistance to evacuation in the common duct at Oddi's sphincter, the lipiodol is stopped by the contraction of the hepatic duct, which appears as a threadlike stricture or is otherwise considerably reduced in diameter. In the intervals of digestion when the sphincter of Oddi is closed, it is reasonable to suppose that, by active contractions, the common duct causes the bile to ascend; the movement is limited by the hepatic duct's contraction, and the bile is forced into the gallbladder, where it is stored and concentrated. The hepatic duct may have the same function during the emptying of the gallbladder.

As a matter of fact, one is allowed to suppose that, if the hepatic duct, according to recent anatomic researches, does not have a real sphincter, it acts as one from a physiologic point of view. It is a *protective mechanism,* which should be respected, while performing choledochostomy or creating any kind of anastomosis between the common bile duct and the duodenum.

SPHINCTERITIS

Generic terms to designate disturbances at the level of the sphincter of Oddi are legion, so much so that it is no exaggeration to qualify this state as anarchic, this being explained partly by the existing discrepancy regarding the etiopathology.

The following designations can be found: spastic cholepathy (Schmieden and Niessen), biliary dyskinesis (Ivy and Sandblom), biliary disgynergia (Best and Hicken), papillitis, sphincteritis (Walker and Thiessen), resistance of the papilla of Vater, schleroretractile choledocho-odditis (Del Valle). In the midst of so much confusion, any extreme position taken up sins either from omission or from excess.

I have endeavored to take into account all the points of view, uniting under the name "odditis" the obstructive phenomena, although this does not seem to be the ideal designation. Odditis is subdivided into dyskinetic and stenosing odditis.

Dyskinesis, an expression of disturbed function, to my mind, is best evidenced by the partial contraction of the sphincter, brought about at its distal sympathicotropic portion. It is precisely this disturbed function that is the cause of *reflux along Wirsung's duct.* Sometimes it is possible during the operation to detect a total contraction of the sphincter, followed some minutes afterward by its partial opening with reflux along Wirsung's duct; in other cases the latter is filled almost immediately. This proves that no mechanical factor plays any part in the reflux along Wirsung's duct. Obviously, according to this conception of dysfunction, the same phenomena must occur in a greater number of cases than those that are made evident by operative cholangiography; the two ducts do not open at the ampulla of Vater in every case, and the phenomena may occur at any other time apart from the operation. I com-

pare the dyskinesis to the dysthyroidism of these upholding the dual theory, and stenosing odditis in its initial stage to the hyperthyroidism. The first is a disturbance of function, the second an increase of the same.

The name *stenosing odditis* remains for all those resistant papillas, without specifying, naturally, the factors that intervene to create the more or less permanent obstruction at the level of Oddi's sphincter.

I have documentation of 600 cases, which furnish irrefutable proof by means of operative cholangeitis that dyskinesis and stenosing odditis really exist. As a matter of fact, according to my experience, some painful sequelae of cholecystectomy are closely connected with dyskinesis and stenosing odditis. Some patients in whom the gallbladder was removed and the abdominal wall closed without drainage have returned complaining of painful attacks, beginning immediately after operation. The symptoms were similar to those of so-called hepatic colic. Examination of the roentgenograms obtained during the operation demonstrated conclusively a sluggish evacuation of the common bile duct, due to a certain degree of resistance of the sphincter of Oddi. It is right to infer that in those patients with an excretory system that is not adaptable the suppression of a slightly altered gallbladder may increase the painful attacks. These facts prove that the bile retention is sometimes the main cause of the attacks before and after cholecystectomy. This explains the improvement experienced after medical drainage of the bile duct, and the recurrence observed when such patients are given substances provoking spasm of the sphincter of Oddi. This statement is also supported by the dilatation of the stump of the cystic duct, observed in certain cases in which a second operation was performed after cholecystectomy.

OVERLOOKED STONES

Operative cholangiography gives precise information in the field of overlooked stones.

Choledochostomy, followed by instrumental exploration, has been advocated in its place. It is clear that choledochostomy does not lead to ill effects when the duct is of greater diameter than normal; but incision of a normal duct is more serious in that it may lead to stenosis.

The choledochostomy should be done when the hepatic duct has thickened walls and is dilated, and if the bile withdrawn by previous puncture contains particles in suspension. According to my experience, it is not always possible to be sure of the diameter and thickness of the duct; it is also a fact that sometimes a small stone can be discovered at the lower third or in the papilla and yet in association with a thin-walled duct, and even with a transparent bile content.

The importance of operative cholangiography in the recognition of common bile duct stones is indisputable. One of the outstanding facts is constituted by the comparison of the percentage figures before and after the systematic employment of this procedure; my statistics obtained with the exclusive employment of the palpation, choledochostomy and instrumental exploration varied around 12 per cent; at present, with the use of operative cholangiography the percentage has reached 24. This is probably the highest percentage recorded at present. In addition, by personal inquiry among those most experienced in biliary tract surgery, I have been able to prove that the highest percentages are obtained by those surgeons who have incorporated operative cholangiography as an exploratory procedure.

I believe therefore that operative cholangiography should be associated with the other resources employed during the operation.

SUMMARY

On the basis of the results obtained in 600 cases in which operative cholangiography was used, the author concludes that this procedure, with the use of lipiodol, is of value in revealing the nature of obstruction in and the functional capacity of the bile passages.

DISCUSSION

DR. MOSES BEHREND, Philadelphia: Surgeons throughout the world ought to extend to Dr. Mirizzi a vote of thanks for bringing cholangiography to the front in the diagnosis of stones that have been left in the common duct. He should also be thanked for the beautiful demonstration concerning the narrowing of the prostatic duct and what may result as a consequence.

I should like to know whether Dr. Mirizzi uses cholangiography after operations on the common duct, when the T-tube is still in place. I have preferred this tube to a straight tube placed in the common duct, during a cholangiography. I expect to speak on the subject in this city within ten days. I have done 124 operations for obstruction of the common duct due to stones that were originally in the common duct and stones that were left at the time an operation had been performed.

My associates and I have used cholangiography in all cases, whether the operation was done for stones or for a malignant growth, and we have learned a great deal, but a hospital must be properly equipped for doing cholangiography at the time of operation. After the operation and when the tube is still in place one can take the patient to the x-ray room, but if one has not the equipment in the operating room it is well nigh impossible to use cholangiography.

DR. FREDERICK M. DOUGLASS, Toledo, Ohio: I should like to emphasize the postoperative results, and I should like to ask Dr. Mirizzi to tell us his experience in that group of patients who show large dilatation of the biliary tree. The history in these cases is always one of long standing, and this means infection in the liver. Unless the common duct is drained again and again over a long period, the final results will not be good.

The dilatation diminishes as the infection recedes, and that is the point I should like to emphasize.

DR. T. F. MCCARTHY, Lincoln, Neb.: What is the mortality in these cases? I am speaking of recovery from infections of the gallbladder tree and how many cases one finds after the gallbladder has been excised. Does one find such cases more commonly when it has been excised or when it has been drained?

It has been my observation that many times infections in the biliary tree occur after removal of the gallbladder. Infections of the liver occur when the bile does not have an outlet. By this I mean that a gallbladder much inflamed is often excised when possibly drainage is preferable.

DR. P. L. MIRIZZI, Córdoba, Argentina: I have performed 600 such procedures, with success in all. Sometimes in dissecting ducts I have had some difficulty, but if one goes from the wall of the gallbladder to the cystic duct, one comes to the common bile duct. It is often difficult to see this. In exceptional cases one has to perform the injection into the common bile duct.

RÉSUMÉ

La cholangiographie opératoire

Se basant sur les résultats obtenus dans 600 cas de cholangiographie opératoire, l'auteur conclue que cet procédé, avec l'emploi du lipiodol, révèle la nature de l'obstruction dans et la capacité fonctionnelle des conduits biliaires.

ZUSAMMENFASSUNG

Operative Cholangiographie

Der Autor kommt auf Grund der Resultate von 600 Fällen zu der Anschauung, dass diese Methode bei der Anwendung von Lipiodol von grossen Werte für die Entdeckung von Obstruktionen in den Gallengängen und deren funktionellen Kapazität ist.

SUMARIO

Colangiografía operatíva

Basandose en los resultados obtenidos en 600 casos en los cuales colangiografía operatíva fué hecha, el autor concluye que éste procedimiento con el uso de lipiodol, es de valor para revelar la naturaleza de la obstrucción en la capacidad funcional de pase de la bilis.

RIASSUNTO

Colangiografia operativa

Sulla scorta di 600 casi nei quali questo metodo fù applicato l'autore conclude che la colangiografia operatoria con lipiodol è di gran valore nella rivelazione della natura di ostruzioni e della capacità funzionale dei condotti bileari.

FELLOWSHIP DUES, AS WELL AS DUES FOR MEMBERSHIP AND ASSOCIATE MEMBERSHIP, ARE PAYABLE NOW AND SHOULD BE SENT TO DR. BENJAMIN I. GOLDEN, DAVIS MEMORIAL HOSPITAL, ELKINS, W. VA.

NOTICE: — THOSE INTENDING TO PARTICIPATE IN THE SCIENTIFIC PROGRAM AT THE NATIONAL MEETING OF THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS IN VENICE, FLORIDA, KINDLY COMMUNICATE PROMPTLY WITH DR. FREDERICK M. DOUGLASS, 421 MICHIGAN STREET, TOLEDO, OHIO, OR WITH DR. FRED H. ALBEE, 57 WEST 57TH STREET, NEW YORK CITY.

BACK NUMBERS OF THE JOURNAL

THOSE WHO HAVE EXTRA COPIES OF THE BACK NUMBERS OF THE JOURNAL AND WISH TO DISPOSE OF THEM PLEASE COMMUNICATE WITH THE EDITORIAL OFFICE

PLANNING THE SURGICAL DEPARTMENT OF THE MODERN HOSPITAL*

WILLIAM HENRY WALSH, M.D., F.A.C.P.
CHICAGO

STRANGE as it may seem, the surgeons, who are most concerned with the functional efficiency of the surgical facilities in a hospital, are too often not consulted about the planning of operating rooms until the design has reached a stage where changes cannot be readily made. This is unfortunate, since, in our experience, the ideas of surgeons have proved exceedingly valuable and are responsible for some of the most advanced improvements in design and equipment. The operating suite is the workshop of the surgeon, designed to meet his reasonable requirements, and should not be considered, as it too frequently is, a showroom of architectural and engineering endeavor.

On the other hand, those of us who have devoted many years to the study of hospital planning and who are intimately acquainted with surgical methods and procedures are occasionally confronted with the surgeon of the prima donna type, so deeply interested in his own particular specialty as to completely ignore the existence of any other or the desirability of coordinating his particular needs with those of his colleagues. To accede to the wishes of such an individual would subordinate the functional efficiency of the whole institution to his own unreasonable demands, and some of the freakish operating suites encountered in certain hospitals offer evidence of the power exerted by such persons.

In modern planning, therefore, we endeavor to avoid these two extremes and, after the space to be allotted has been determined, the surgeons concerned are consulted, and they are afforded the widest latitude in effecting such changes in design, articulation and equipment as appear to be practical and feasible.

In addition to the operating rooms required on the operating room floor, the surgical department is also particularly concerned with the casualty section, orthopedic and splint shops, the sterilizing facilities, the central service for surgical trays and finally the provision of beds to accommodate the various economic and clinical groups. At this time, however,we shall confine our remarks principally to the design and mechanical equipment of the operating rooms.

It has often been said that a good surgeon with adequate assistance may be able to accomplish excellent work under the most adverse physical conditions; however, it is generally agreed that it is to the advantage of all concerned to have the surgical suite so designed that exact technic may be facilitated, functional efficiency assured and precision equipment made readily available.

While certain features in the design of operating suites may be standardized, the difference of technic and requirements of groups of surgeons in different geographic areas make it impossible to design a single surgical suite that will suit all hospitals, thus emphasizing the need for studying the specific requirements of each institution and incorporating such local variants as may be necessary to meet the requirements of those who are to work therein.

LOCATION OF THE SURGICAL SUITE

In times past, it was considered necessary for the operating rooms to

*Read at the International Scientific Assembly of the International College of Surgeons, New York, May 23, 1939.

face the north, as this orientation afforded the best daylight. Today, with the efficient artificial lighting equipment available, orientation is of little importance and dependence for illumination is placed on artificial lighting. Likewise, the old skylights, which made many operating rooms almost uninhabitable during the summer months and ruined the architectural lines of the structure, have become passé and are either entirely omitted or carefully shaded. It is not unusual to find operating rooms entirely without windows, or with the window space filled in with glass brick. It is still desirable to locate the operating suite on an upper floor, and preferably on the top floor, in order to decrease traffic through it.

NUMBER OF OPERATING ROOMS

The extraordinary expense involved in building and equipping operating rooms demands the most careful estimation of the number of such rooms required. An excess of such facilities incurs a heavy overhead expense, while, on the other hand, inadequate operating facilities handicap the surgeons, increase the difficulties of the nursing staff and militate against the maintenance of aseptic technic.

The determination, then, of the number of operating rooms to be provided in a given hospital project is dependent on such factors as the qualifications of the staff, the proportion of surgical cases to be treated, the bed capacity, an anticipated rate of bed utilization, the number of days of hospitalization and the number of operations that can be performed in one operating room daily. With calculations based on a one hundred bed hospital used to 82 per cent of its capacity and each patient using a bed for twelve days, with half the patients surgical, the surgeons operating three hundred days in a year and using the operating room for two patients a day, that institution would require two operating rooms with all the other facilities ordinarily included in an operating suite and, in addition, an emergency operating room in the casualty section.

For a two hundred bed general hospital of the same type there would be required four operating rooms, for a three hundred bed hospital six, for a four hundred bed hospital eight, and on up to the eight hundred bed hospital requiring sixteen operating rooms. As may well be realized, any change in the basic factors will alter the requirements, but for general purposes this method of estimating needs for operating facilities will serve as a reasonable approach to the final decision which, in every instance, must be based on known requirements.

SPECIAL OPERATING ROOMS

There is a strong tendency on the part of certain specialists to demand separate operating rooms, sometimes entirely detached from the surgical suite, and also to request that these rooms be used exclusively for one specialty. With respect to the detachment of operating rooms for any particular specialty from the operating suite, it is submitted that such separation interferes with nursing supervision, complicates efficient planning, and unjustifiably increases its cost; it separates those surgeons from their colleagues, and unduly raises the expense of maintenance.

Specially equipped operating rooms for urology, orthopedics, brain surgery, and eye, ear, nose and throat surgery are, of course, necessary, and every effort is made to meet the requirement for these specialties. For example, radiologic facilities are provided for urology and orthopedics, and piped sterile water for urology. Viewing boxes for radiography, warming cabinets for parenteral solutions, vacuum apparatus and special lighting fixtures are placed in every operating room. For the orthopedic room, space and facilities are provided for plaster and splint work and for the storage of the orthopedic table

when not in use, thereby permitting the use of this room for other work. Many other modifications are often made to meet the needs of highly specialized work.

The need for radiographic work in urology has influenced the location of cystoscopy rooms in radiologic departments rather than in surgeries, and perhaps in those instances where the urologist is wholly dependent on radiology for that service there is some justification for such an arrangement. It is desired, however, to point out that the bulk of the work of the urologist is of a nature which demands the utilization of surgical equipment, technic and personnel; it is also significant that urologists are becoming more and more adept in the use and interpretation of x-ray films and are almost completely dispensing with the aid of the radiologist. Under such circumstances and in view of the availability of more adequate facilities and personnel in the operating suite, the tendency to place cystoscopic rooms for house patients in the surgical suite is growing.

ANESTHETIZING ROOMS

Although present methods of anesthesia permit the patient to be placed on the operating table immediately on arrival, it occasionally happens that an operating room is not quite ready. So in every suite there should be one or more rooms that can be used for waiting, anesthetizing, recovery or postoperative intravenous therapy.

In the larger operating suites a room for the chief anesthetist will be required, in which are provided cabinets for the various items of equipment and supplies which may be needed for the induction of anesthesia or for resuscitation. An electric refrigerator with temperature ranges between 2 and 4 C. should also be located here for the storage of previously secured blood for infusion, of the four types in the proportion in which they are generally needed.*

DRESSING ROOMS

It is important that the dressing rooms for surgeons (and for nurses when space is available) be of adequate size and properly equipped and located. In order to assure the greatest degree of privacy and to permit smoking within the dressing room, we endeavor to locate this facility at the entrance to the suite with a door outside the suite for entering in street clothes, and a door inside the suite through which the surgeon enters the operating room area ready to scrub up. Excepting in the smallest hospitals the facilities for scrubbing up should never be in the surgeons' dressing room, these being placed in all cases immediately accessible to the operating rooms.

The dressing room should be equipped with lockers, showers, toilet and lavatory, comfortable lounge chairs, a table with writing materials and, if desired, a dictaphone. When both male and female surgeons have to be provided for, as has been the case in our experience in several instances, we have used the same locker and lounge room for both sexes, with separate toilet, shower and dressing alcove for the women. In some very large teaching institutions it has been found desirable to arrange a separate dressing room for residents and interns. For nurses, it is advantageous to locate dressing room facilities in close proximity to the nurses' workroom, but this room should not be used for any other purpose than washing and dressing.

OBSERVATION GALLERIES

Both architectural and engineering ingenuity have been concentrated on the construction of elaborate galleries over

* Experience with the Cook County Hospital blood bank shows the amounts of the types as follows: type AB, 4 per cent; type A, 36 per cent; type B, 15 per cent; type C, 45 per cent.

operating rooms, intended to provide unobstructed observation for doctors, students and nurses, and also to keep visitors out of the operating rooms. Excepting in a very few instances where galleries have been provided at enormous expense and are wired for sound transmission, it has been found impossible to teach operative surgery by this means, and motion pictures have proved far superior. It would seem, therefore, that so far as teaching is concerned, galleries are not worth their cost. If galleries involving the use of two story heights are to be provided, therefore, it should be understood that their use is for visitors more interested in a spectacle than in the actual technic of operation.

Because of the apparent inability of some hospitals to exclude visitors from operating rooms we endeavor to meet this situation by providing a space at one end of the operating room with a glass panel and a separate door so that visitors can enter the area without going into or through the operating room. This arrangement does not involve the use of two stories.

RADIOLOGIC SERVICE

The custom of locating this department on the same floor with the operating rooms has prevailed, but since auxiliary x-ray equipment is now an essential part of a modern surgical suite, the need for placing the main department there no longer exists. As has elsewhere been noted, it is desirable to use every possible means to divert unnecessary traffic from the surgical suite, and this cannot be accomplished if the radiologic department, serving the whole hospital, and often outpatients, is in close proximity to the operating rooms.

PATHOLOGIC AND BACTERIOLOGIC SERVICES

There should be readily available in the surgical suite a suitable room for the rapid preparation and microscopic examination of frozen sections and for consultation between the pathologist and surgeons. In the same room facilities should be available for bacteriologic examinations, since the determination of the nature of pathologic organisms during the course of an operation is often of vital importance. As in the case of the radiologic department, however, the main pathologic laboratories, serving all patients in the hospital, as well as outpatients, wherein is concentrated pathologic material of great virulence, should never be located on the same floor as the surgical suite, excepting in very small hospitals where other arrangements are impossible.

Because of the heavy traffic to both the radiologic and the pathologic department, the desirability of their articulation with each other and the advantage of placing these two diagnostic services readily accessible to the physicians' reception room, medical records and library, it is our practice to locate both either on the main floor of the hospital or as close to it as feasible.

NURSING FACILITIES

When operating suites are planned by surgeons, frequently little or no consideration is given to those necessary facilities which are essential to the efficiency of the important work assigned to the nursing staff. The smallest operating suite requires at least one well equipped utility room in close proximity to the operating rooms, water and instrument sterilizers and scrub-up sinks between every two operating rooms, a nurses' work room with autoclaves and facilities for cleaning and storing instruments. As the size of the surgical suite increases, the nursing facilities must be expanded in proportion. The adequacy of the space and equipment provided will, to a considerable extent, determine the speed, economy and efficiency of the nursing service in the operating suite.

WORKROOM AND STERILIZING

Even in those hospitals where there is a central sterilizing room for the entire hospital, it is desirable, we think, to have separate facilities in a large surgical suite for the preparation, storage and emergency sterilization of instruments and dressings. The room for this work should be centralized in the suite, so far as possible, and should be equipped with built-in antoclaves and utensil sterilizers of sufficient capacity to meet the requirements. In this room there should always be available a liberal supply of sterile solutions and dressings, and all instruments should be readily accessible.

SUPERVISOR'S OFFICE

The surgical supervisor of an operating suite is responsible for the orderliness and general conduct of this area, including the instruction of student nurses, and her duties are such as to require a suitable office for conference with surgeons and nurses and the maintenance of the records of the department.

RELATIVES' WAITING ROOM

Whenever a room for waiting relations is provided it must be located outside the operating area. It should be tastefully and comfortably furnished and equipped with a public telephone booth for outside calls.

ORTHOPEDIC SHOP

No surgical department is complete without readily available facilities for the manufacture of casts, splints and appliances. In the small hospital, of course, it is necessary to have the major portion of such work done outside, but in those institutions where extensive orthopedic work is conducted the establishment of a well equipped shop will add much to the efficiency of the service and decrease the cost to the patient. In large hospitals, therefore, or in smaller ones doing extensive orthopedic work, we always make adequate provision for a completely equipped shop in the basement of the hospital.

LIGHTING

We have previously mentioned the undependability of daylight because of its variability, and the undesirable feature of the large operating room windows and skylights. Consideration will be here concentrated on artificial lighting.

The artificial illumination of operating rooms has been the subject of a great deal of study and experimentation during recent years, resulting in the production of various special fixtures which are more or less satisfactory for the purpose. In choosing a special lighting fixture for the operating room, the following requirements, which are embodied in several units on the market, should be specified:

1. A constant illuminating intensity at the work place of from 350 to 500 foot candles should be at all times available, with a variable dominant direction to the light.
2. The lamp should be designed so that an additional filament is available in the event of the burning out of one. Lamps are now available with a ring filament for diffuse illumination and a concentrated spotlight filament for maximum visual efficiency; these may be used separately or simultaneously.
3. Shadows should be entirely eliminated or minimized.
4. There should be no glare, and provision should be made to eliminate excess heat.
5. The lamp should have a constant color value; under certain conditions accuracy of color value may be attained by the use of approved spectral transmission glass.
6. The cost of installation, operation and maintenance should be reasonable.

Instead of the separate unit a system of ceiling lights with prismatic plates or reflectors which focus the light on the work plane is sometimes used. While this is satisfactory from the standpoint

of illumination, it involves a rather high original cost, requires constant attention and consumes an enormous amount of current.

In all cases general illumination is required in addition to the special lighting, which may be of the direct type with a diffusing globe. There should also be a portable spotlight, preferably of the independent battery type with trickle charger, in every operating room for emergency use.

COLOR SCHEME

The object of using color in an operating room is to decrease glare and to create the best conditions for visual accommodation. Glare not only decreases visability, but causes discomfort, eyestrain disorders and is distracting. To overcome the glare of bright walls in the visual field of the surgeon, various colors have been used not only for walls but for sheets and drapes used in the operating field. Wall surfaces and surroundings act as light reflectors when white or as light absorbents when dark, and in the operating room the two extremes must be avoided. The reflecting power of color runs from about 87 per cent for milk-white to 10 per cent for black, and so a shade ranging midway between the two is indicated. A dull French green or gray-green for the wainscoting extending to a height of about 7 feet (2.1 meters) with a lighter gray-green above has given great satisfaction, but a sky-blue wainscot has been used with equal effectiveness. A gray tile floor will add considerably to the eye comfort and visual acuity of the surgeon.

AIR CONDITIONING

The aims in applying air conditioning to surgical suites may be briefly stated as follows: (*a*) maintenance of temperature most conducive to the welfare of the patient; (*b*) a degree of relative humidity sufficient to combat static electricity; (*c*) the purification of the air by washing, filtering and circulation. Regardless of the outside temperature, the lowest level for an operating room is about 80 F., and the temperature should not be permitted to rise much above 90 F. With respect to relative humidity, if woolen or silk materials are excluded from the operating rooms and other precautions are taken against explosions, 55 per cent will meet the requirements.

It has been shown by Hart[2] that pathogenic bacteria, predominately staphylococci, are present in untreated air in the operating room, and various measures have been used to free the air of bacteria, among which may be mentioned the following: the application of bactericidal radiant energy in the region of the operative incision and the supply table; the same treatment of the air in its passage into the room; the treatment of the intake air by electrical precipitation, and, finally, the washing and filtering of the intake air without other treatment. We believe it is more practical to utilize the latter method while adopting a type of surgical mask which will control as well as restrict the contamination of the atmosphere of the operating room by doctors and nurses through the use of disposable, tight-fitting face masks of material capable of filtering out the bacteria, as proposed by Arnold.[1]

EXPLOSION HAZARDS

Owing to the more extensive use of high explosive or inflammable gases in anesthesia, the explosion hazards have become so great as to require the most extraordinary precautions to avert them. Explosion results from the combination of : (1) an inflammable gas, vapor or other substance; (2) oxygen (either pure or in the air), or a gas or other substance which provides oxygen (such as nitrous oxide), and (3) a source of ignition in a dry atmosphere. These factors suggest the fundamentals in all precautionary measures, viz.: (*a*)

handling and using inflammable anesthetics in minimum quantities; (*b*) minimizing escape into the room; (*c*) eliminating so far as practicable all possible sources of ignition in anesthesia and operating rooms when explosive anesthetics are being used, and above all within the anesthesia equipment itself.

The safeguards recommended may be briefly summarized as follows:

1. Maintenance at all times of sufficient forced ventilation to assure about eight changes of air per hour, and a relative humidity in the operating room of not less than 55 per cent.
2. Elimination, so far as possible, of such materials as wool and silk, which retain high static charges.
3. Prohibition of smoking in the operating suite.
4. Safeguarding of all electrical circuits and electrical equipment against sparking and short circuits by every known means. This contemplates enclosed motors and rheostats; mercury switches; explosion-proof plugs and receptacles; guarded light bulbs, and frequent inspection of cords and terminals of portable equipment. The hazards of spark-producing or incandescent equipment cannot be completely eliminated but may be minimized by the application of the measures herein suggested, but under no circumstances should such equipment be used in the presence of inflammable anesthetics around the patient's head or pleural cavity or without the interposition of a screen between the head and the area of operation.
5. Recognition of the fact that the anesthetizing apparatus with its breathing tubes, bags and mask constitutes the greatest single explosion hazard through the generation of static inside this equipment, and prevention of such a hazard by: (1) adequate humidity both inside and outside the machine; (2) metal mesh in practically continuous close contact with all nonconducting surfaces; reducing and mixing valves to be so designed that there is no possibility of any of the inflammable gases mixing at cylinder pressure with oxygen or nitrous oxide.

PIPING ANESTHETIC GASES

On the assumptions that it would be of advantage to eliminate from the operating suite the large high-pressure tanks containing gases, to reduce traffic, to decrease cost and to add to the convenience of the anesthetist, a number of hospitals have used the method of piping gas to operating rooms, with varying results. We have had considerable experience with this subject from both an administrative and a planning standpoint and, as a result of the dissatisfaction resulting, we advise against such installations in all new projects. Our objections may be summarized as follows:

1. It is a very costly procedure from the standpoint of labor, material and equipment.
2. The installation requires the use of expert labor and special materials, and any deviation from the specifications creates a serious hazard with continuous loss of anesthetic gas. Serious accidents have occurred through defective joints in some installations.
3. Once installed the fixture is permanent, since the piping and elevated floor outlet base become a part of the structure, thus reducing the flexibility of the operating room. Many anesthetists insist on the use of their own anesthetic apparatus and will not use the piped gases even when available.
4. The perfect functioning of a piped gas supply requires the services of a responsible employee thoroughly acquainted with the handling of large high-pressure gas tanks, and in the absence of that individual many difficulties arise; failure to connect a full tank when necessary can cause tragic results.
5. The independent anesthetic gas machines with tanks attached are highly perfected; they are portable and can be used in any room of the hospital, whereas if gas is piped it can only be used in the locations where outlets are provided, and outlets are expensive. Even in hospitals where gases are piped to the operating rooms it becomes necessary to utilize tanks directly for the many other distant locations where it may be necessary to administer an anesthetic.
6. None of the dangers inherent in explosive gases are lessened by piping gases, since most accidents have occurred at the outlet of the gas and not at the tanks. With the modern, independent gas ap-

paratus, danger from explosion can be minimized.

7. The concentration of a large number of different explosive gases in the small area of a tank room constitutes a dangerous hazard unwarranted under the circumstances.

SURGERY FLOORS

From the standpoint of the comfort of those working in operating rooms, a rubber floor would be preferable because of its resiliency, but the maintenance of such a floor in the presence of so much moisture presents a difficult problem. All things considered, our preference is for a terrazzo floor, and it has been the practice to lay this floor with copper strips in small squares so designed that the entire floor may be grounded. At this time, however, the efficacy of grounding is controversial, and it must be admitted that unless all equipment and parts thereof and all persons are fully and properly grounded, which is difficult to accomplish, marked differences of static potential will result which may, in some instances, be more dangerous than with no grounding. Under existing circumstances we are inclined to eliminate floor grounding when adequate humidity can be provided, but to advise grounding as the lesser of two hazards when humidity cannot be depended on.

BLANKET WARMER CABINETS

It has been stated previously that blankets with a high wool content generate static electricity and therefore should be excluded from the operating suite. But blankets are required, and a good cotton flannel blanket properly warmed will meet the needs. The heating of the blankets may best be accomplished by providing built-in heated cabinets readily accessible to the operating rooms.

TELEPHONES AND COMMUNICATION SYSTEM

A telephone is required in the surgeons' dressing room, and we have found it advantageous to connect the dressing room, the anesthetist's office and the supervisor's desk by loud-speaking apparatus so that a surgeon or anesthetist may be quickly called when needed. As occasions arise when a surgeon is obliged to use a telephone after he is scrubbed up, the location of telephones close to operating rooms is a great convenience.

Whatever doctors' calling system is used for the hospital should be extended to the surgical suite, and it will be a convenience if a signal panel is placed in the surgeons' dressing room.

ELEVATORS

The properly designed surgical suite will have direct access to one or more elevators so that stretcher patients may be unloaded into the suite without passing through outside corridors. Needless to say, the elevators must be not less than 8 feet and 4 inches (2.5 meters) in depth and 5 feet and 8 inches (1.5 meter) wide, the doors opening to a degree sufficient to permit the passage of a standard bed.

PLUMBING FIXTURES

The technic of an operating suite has often been adversely affected by the use of unsuitable plumbing fixtures, so that these always demand professional approval. Scrub-up sinks must be deep enough so that running water will not splash; water control should be by either knee or elbow, as preferred, our experience with foot valves being very unfavorable. Faucets of the goose neck, spray type seem to be preferred; the mobile type of liquid soap dispensers with foot control are much more satisfactory than any built-in system that cannot be thoroughly cleaned at frequent intervals. Neither scrub-up nor clinic sinks should be placed within an operating room.

We consider it an advantage to provide a drain in the center of each operating room, properly trapped, so that the

floor can be flushed. Where plaster is used, a special trap must be provided.

In the utility room a combination sink and laundry tub and a flushing rim clinic sink are required. These fixtures can now be secured in stainless steel or monel metal, in which they are more satisfactory than in vitreous china, porcelain enamel or solid porcelain.

The nurses' workroom requires a double drainboard sink and the instrument room a shallow instrument sink with a drainboard.

In the operating room for nose and throat surgery, which can also be used for certain dental procedures, wall outlets are provided for hot and cold water, as well as vacuum and pressure for connection of mobile units designed for these specialties.

There should be, of course, showers, lavatories and toilets for the doctors' and nurses' dressing rooms, also a drinking fountain in the corridor and various other plumbing items required under varying conditions.

CASUALTY SECTION

Having considered the chief factors demanding attention in the setting up of the main surgical suite, we now come to that section of the hospital through which many serious surgical cases enter.

The ideal casualty section should be designed and equipped so as to be capable of meeting the demands of any emergency. This is a large order when one considers the possibility in a single day of such a variegated assortment of admission diagnoses as traumatism, involving fractures and hemorrhage; poisoning of all types, including alcoholism and asphyxia; coma in diabetes; psychopathic conditions, etc.

The casualty department should be placed on the ground floor readily accessible by ambulance and so articulating with an elevator that patients may be quickly transported either to bed or to operating rooms without passing through main corridors. Since both laboratory and x-ray services are needed here, these should be as closely coordinated as possible and, in the larger hospitals, a mobile x-ray equipment should be located in the examining room. Needless to say, the ambulance entrance should be reserved for that purpose, and under no circumstances should it be shared with the undertaker. In its design there should not only be an unloading platform on a level with the ambulance floor, but also a ramp for the easy transport of emergency patients arriving in private automobiles. It is desirable to protect this entrance from high winds and from rain by proper enclosures and an extended canopy.

The minimum requirements for the casualty department are: an examining room; an emergency operating room; scrub-up and sterilizing facilities; plaster and splint supplies; a medicine closet stocked with the regular poison antidotes; an icebox for serums and blood for transfusions; oxygen tanks and resuscitation apparatus.

A cubicled two bed ward with nursing facilities should always be provided even in the small hospital, and larger institutions will require considerably more beds. These emergency beds are used for various types of patients, such as the patient who requires first-aid treatment but who because of shock is unable to be immediately discharged; the patient who is likely to be transferred to another hospital; the moribund patient; the patient suspected of having a coincident communicable disease, and, finally, patients admitted at night who require more constant attention than might be possible elsewhere.

As the casualty department increases in size it is necessary to provide a room for waiting friends adjacent to, but not connected with, the examining rooms, space and facilities for keeping records and as many more examining and operating rooms as the size of the hospital and the demands require.

It is recognized, of course, that a con-

siderable number of emergency cases are not surgical, but because of the predominately surgical aspect of this service, it is usually considered expedient to staff the department with surgically trained personnel.

SUMMARY AND CONCLUSIONS

It is in the surgical suite of the hospital perhaps more than in any other, where death is constantly lurking and where judgments on which life and death hang in the balance must be made with rapidity and precision. Any aid, therefore, that can be furnished the surgeon, with respect to physical conditions or equipment, that may contribute to the perfection of scientific accomplishment should be promptly made available to the end that he shall have at his command every known facility in his laudable efforts to save life.

On the other hand, the surgeons, as well as all others concerned with the cost of medical care, must use every influence to stop the unnecessary extravagance in hospital planning, encourage intelligent efforts to decrease costs and adopt economies which do not adversely affect functional efficiency.

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DISCUSSION

DR. R. W. MCNEALY, Chicago: Having been confronted with many of these questions during the past three years, in contemplation of the new hospital in Chicago, I am conscious of many of the problems which Dr. Walsh has presented. I should like to suggest that any one who contemplates building a surgical unit had better have an intimate knowledge of all the details, before the architect gets too firmly established in his plans. I have heard that those Mexican burros are hard to change in any direction, but I believe that architects are even harder to dissuade!

The first question I wish to discuss is that of light in the operating room. This has caused us more worry than any other one thing. The old hanging lamps, such as were illustrated in Dr. Walsh's slide, are typical of what has been suggested to us as lighting equipment. I am rather definitely opposed to hanging fixtures from the ceiling. They accumulate a great deal of dirt and lend themselves poorly to cleaning by any one except janitors with ladders, etc. Two distinct types of lighting are needed in the operating room: (1) the so-called working light, or diffused light, and (2) the spotlight, or surgical light. I am in accord that the old skylights and north lights are out, since we use entirely artificial light, and now that we are using air conditioning we will probably resort to the glass bricks entirely, in replacement of windows.

The question of colors in the operating room has been another problem that we have been working over for some time. There was a greater flair for colors, probably, than in anything else—except spring styles in women's dresses—so we had everything from pale pinks to dark greens. The color of the walls was not so difficult to decide. We thought of non-glare tile in some of the pastel shades.

Considerable concern was caused by the question whether all the linen should be in some color such as green, blue or gray. Having tried all these colors, we have concluded that it is an expensive affair. Any of the more definite shades become spotted and ragged looking in a short time, so we have come to the conclusion that our purpose can best be served by having all the equipment one standard color (I am speaking of gowns, table covers, sheets, and so on). We felt that we would have cleaner, fresher and better looking linen by having most of it white and draping the immediate field in either a gray or a green. In this case one must have in the hospital some means of dipping or dyeing the linen frequently, because, owing to chemicals, it becomes spotted and ugly.

The question of spectators is another issue that has worried us, because we felt that we should have suitable facilities for them. But, as Dr. Walsh has said, I do not believe that one can accord them any space which will give them an adequate view of the operative field. I think we should stick to the single floor plan in most instances, and, as nearly as possible, have the operating room completely walled off with glass. We should allow the spectators to come in, and then entertain them with loud-speaker systems, illustrations or x-ray view boxes. Certainly, no operating room that is in constant use can be made attractive for visitors, that is, so that they can get a position where they can really see the operative field.

RÉSUMÉ

Installation d'un département chirurgical dans un hôpital moderne

On doit considerer la location et le nombre des salles d'opération et n'oublier pas les chambres destinées pour l'anesthésie des malades. Les salles de pansements, les galleries d'observation, les dispositions à prendre pour les services radiologique, pathologique et bactériologique seront l'objet d'étude et de réflexion. Parmi les autres desiderata de grande importance citons les couleurs, l'aération, les planchers, les ascenseurs, le plombage et autres accessories.

Tout ce qui peut contribuer au perfectionnement de la science chirurgicale doit être accessible, mais il faut décourager toute extravagance.

ZUSAMMENFASSUNG

Projektierung der chirurgischen Abteilung eines modernen Krankenhauses

Im Projekt eines modernen Krankenhauses sollte die Lage und Zahl der Operationssäle, die Einrichtung von Vorbereitungsräumen, Verbandräumen, Zuschauergallerien, Röntgenabteilung, pathologischer und bakteriologischer Abteilung beachtet werden. Farben, Luftkühlung, Böden, Aufzüge und Leitungsrohren sind wichtig.

In der chirurgischen Abteilung sollte alles was zur wissenschaftlichen Vervollkommnung nötig ist vorhanden sein; jeder unnötige Luxus jedoch sollte vermieden werden.

SUMARIO

Planiando el departamento quirúrgico del hospital moderno

Al planear un hospital moderno, el lugar y el número de salones de operación debe ser considerado, teniendo en cuenta las comodidades para la anestesia, cuarto de curas, sala de observación, servicio rediográfico, etc. Color de las paredes, purificación del aire, pisos, elevadores y plomería son de importancia.

En el juego de salones de operación, cualquier ayuda que contribuya á la perfección de miras cientificas debe estar rapidamente á nuestro alcance, pero extravagancias innecesarias deben ser desechadas al planear un hospital.

RIASSUNTO

Il piano per un reparto chirurgico in un ospedale moderno

Nel piano per un ospedale moderno si dovrebbe considerare il luogo e numero delle sale operatorie, le facilitazioni per anestesia, gallerie per osservatori, reparto radiologico, patologico e batteriologico e così via. Colori, refrigerazione dell'aria, pavimenti, ascensori e tubature sono importanti.

Ogni aiuto che contribuisce alla perfezione scientifica dovrebbe essere presente, ma ogni luso superfluo dovrebbe essere evitato.

—o—

The **Society of Wives of Surgeons of the Mexican Academy of Surgery** held a cocktail party for the women members of the Mexican Academy of Surgery Sunday July 23 in the gardens of Quinta del Lago, placed at their disposal by Dr. and Mrs. Abraham Ayala González.

PIONEER SURGERY IN SYRIA*

DR. A. A. ALTOUNYAN, F.I.C.S.

The Altounyan Hospital

ALEPPO, SYRIA

I THOUGHT, perhaps, to relieve the mental tension from the most interesting and instructive papers that we have been hearing in these few days, that I would read some short reminiscences of my experiences of over fifty-five years in medicine and surgery. I really started my medical life earlier than fifty-five years ago. At the age of 14, in Sivas, Turkey, I was one of four private pupils of Dr. West, an American medical missionary physician. I studied anatomy, chemistry and similar subjects. Among various operations that I saw were lateral lithotomy, amputations, operations for strangulated hernia, in which the bowel, whether gangrenous or not, was always reposited, operations for tumors that were not too near the neck, intervention for abscesses, puncture of abdominal ascites, etc. I recall an extensive plastic operation in which the patient died after a few days from tetanus. In this case the chief assistant was scolded because he had used a "rusty" needle. Version and forceps deliveries were common practices in midwifery. Ether and chloroform were the only anesthetics used. An ordinary table or a couple of packing cases served as our operating table. No antiseptics were used. Hands were not always washed before the operations, *but always after.* The first antiseptic I saw used was that employed by my cousin, a former pupil of Dr. West. He performed a successful operation on a boy who had fallen onto a sharp tree branch and remained pinned there for four hours. My cousin carefully washed a large coil of intestine (which was protruding) in water to which a few drops of carbolic acid were added and replaced it. He stitched the wound without drainage, and it healed by first intention! Anatomy was studied by stealing a corpse from the cemetery at night in winter. On one sad occasion we were discovered, as the corpse was in only a temporary grave and was found missing when the relatives came to recover it for burial. Later, I entered the Central Turkey Medical College in Aintab under the American Congregational Mission. After finishing my studies here I became a tutor, teaching anatomy and therapeutics for three years. This mission helped me to come to Columbia College in New York, where I was granted a diploma of the College of Physicians and Surgeons of New York in 1885. After further studies in New York, where I took a full course of histology and histopathology under Professor Heitman and a course in minute anatomy of the brain under Spitzka in a postgraduate school, I studied in Heidelberg in Czerny's and in Erb's clinic, and studied bacteriology in Koch's laboratory in Berlin. I returned to Aintab as *professor of pathology, medicine, surgery, etc.!*

My associates were Dr. Shepard from the United States and Dr. Graham from Canada. This school was closed after two years, so I started general work in Aleppo, Syria. This was in 1889. The country was then in the Dark Ages of medicine. I introduced Western medicine and aseptic surgery. I operated on some patients in their homes and on others in my clinic. Samovars provided hot water. Most of the patients were taken home to be nursed by their families, as nurses were unheard of. I kept

* Read at the International Assembly of the International College of Surgeons, New York, May 23, 1939.

one room in my clinic for very ill patients. I met with strong opposition in surgery; my colleagues at first opposed operations, but in time they were gradually converted.

MEDICINE

This was far behind the medicine in Europe, and fevers were known as intermittent or remittant. Typhus fever was not recognized. Typhoid was seldom diagnosed. One of my first important medical cases was that of a young daughter of one of Sultan Hamid's bodyguard. I was called in consultation with four European and five military physicians, who had all been treating the condition as acute miliary tuberculosis. On examination I diagnosed typhoid fever complicated with bronchial pneumonia. My colleagues were very angry, but as they considered the case hopeless it was left in my hands. The patient responded to typhoid treatment; after two weeks the temperature was normal, and recovery followed. In the same year I had my first experience with a cholera epidemic and was able to isolate the comma bacillus of the Asiatic type. Fortunately, I had all the necessary apparatus and chemicals with me to make cultures. It happened that the Sultan of Turkey's fortune teller in the palace at Istanbul had foretold that the Sultan would die from cholera coming from Aleppo, so a large body of physicians from Istanbul visited Aleppo to try and prevent the cholera from spreading their way.

There was no ice to be found to control the temperature of my culture plates and tubes, so I kept them on the stone steps leading down to the deep underground rainwater drinking system. I was able to help the people by publishing pamphlets on preventive measures. Intravenous injections of hypertonic saline solutions in large quantities, 1, 2 and 3 liters, saved many lives and worked miraculously in bringing apparently dead men to life again.

X-RAYS

In 1896, at Watson's, London, I bought a "complete" x-ray equipment, which worked with bichromate cells. It had a 6 inch spark. I took it to Aleppo. I called the important townsmen, European and native, and demonstrated to them in a dark room the bones of their hands and metallic objects in wooden boxes. They were much impressed. This x-ray set served me until 1909, when I installed a new x-ray apparatus and an engine for electric lighting (there was no electricity in Aleppo) and pumping water. This was the only existing x-ray apparatus in Syria and Palestine.

SURGERY

Surgery was still further behind the times. Before coming to Aleppo I had occasionally, during summer holidays, made medicosurgical tours. I saw many desperate and interesting cases and was compelled with a minimum supply of instruments (including only four clamps) to perform extensive operations in very primitive houses. I removed a tumor from a small boy's neck, half the size of his head. The operation took me four hours. I also removed a tumor weighing about 12 pounds [5.4 Kg.]) from the axilla of an Arab man aged 90. A female relative of this man, aged 108, suffering from chronic arthritis, had a third dentition, a row of eight white teeth, the size of milk teeth, in the inferior maxilla.

In Aleppo I saw four rectovesical fistulas resulting from lateral lithotomy, also enormous neglected hernias. In the case of a beggar, no organ remained in the abdomen. All had glided into the hernia. When the patient sat down, his "newly acquired abdomen" touched the ground. When walking he supported it with a sling. Hydrocele cases were

equally bad. I removed a uterine myoma weighing 27 pounds (12.2 Kg.). I was obliged to take care of enormous ovarian tumors, advanced renal diseases, cranial traumas and hydatids and repair partially destroyed and disfigured faces, noses and lips, the results of Aleppo differences of opinion. Thus Aleppo was, and still is, a rich surgical field.

But in those days the word operation spelt death. When I proposed an operation all the family would slap their faces, tear their hair and set up a wailing as for a death. To gain their confidence in surgery I chose my cases carefully. My first hundred and fifty operations, comprising hysterectomy, removal of ovarian tumors, repair of hernias, operations on glands, etc., were crowned with extraordinary success. Pediculated abdominal tumors were treated extraperitoneally. In a case of hydatid of the spleen with numerous adhesions, I used the same method successfully. Peritonitis was conspicuous by its absence. I took the risk of removing a large adenomatous goiter. The operation lasted several hours, and I finished my work by the light of a hanging oil lamp. I performed the first renal operation in Aleppo. Having diagnosed a renal stone, I exposed the kidney and felt a small stone, which during the manipulation of extraction, to my great disappointment, disappeared, and, as I thought, passed down the ureter. The following day the stone was passed with the urine.

In diagnosing renal calculus, in addition to noting the clinical symptoms I depended on microscopic examination of the urine, attaching importance to the types of epithelia and blood cells found in it. In about 90 per cent of cases the diagnosis was correct.

Even today with the aid of x-rays I never operate without confirmation of clinical tests. However, in one instance I diagnosed renal calculus by both x-ray and clinical and microscopic examinations, which led to an incorrect diagnosis. The patient was a six months pregnant woman. Clinical examination showed hematuria and pain in the kidney region. Microscopic examination showed renal epithelia and leukocytes. X-ray examination showed a shadow suggesting a uric acid stone. On operating I found a normal kidney. I closed the incision and performed a median laparotomy. I found an old right ovarian cyst pushed up by the pregnant uterus to the lumbar region; its pedicle was twisted two or three times upon itself. The twisted pedicle in front of the kidney had created the shadow on the x-ray film.

PROGRESS

During its thirty years of functioning my hospital has seen many changes. During the World War I had the help of three English nurses, and at various periods we served Turkish troops and their families as well as German and British troops. Ours was the only hospital having an x-ray equipment in working order in Palestine and Syria. The hospital's motto was the same as that of the International College of Surgeons: *La science n'a pas de patrie.* Since the war, my son, a Cambridge and Middlesex man, has helped me to modernize the hospital, such modernization comprising the acquisition of a new Simmons x-ray apparatus for high voltage roentgen therapy and the latest instruments of all types. We are very happy in our work. We have an extensively organized system of blood examinations and groupings for transfusion.

Whereas formerly American diplomas were looked on scornfully in Syria, today, as a result of the great impetus of American surgery, such a diploma is a prized possession, and it is an honor to me (with all my international training) to be known as the *Hakim Americani*

(American Doctor), and now a still greater honor to be part of the International College of Surgeons. May its progress continue unabated!

SUMMARY

A review of pioneer efforts in surgery is presented. The hardships of establishing modern methods against prejudices are stressed, and a pen picture of early practice in Syria is recorded.

RÉSUMÉ

La chirurgie pionnière en Syrie

L'auteur passe en revue les efforts pionniers de la chirurgie en Syrie. Les difficultés qu'on rencontre à établir les méthodes modernes, à surmonter les préjugés sont décrites en détail. L'auteur nous donne aussi une image exacte et intéressante de l'exercise de la médecine en Syrie au commencement de nôtre ère moderne.

ZUSAMMENFASSUNG

Pionierschirurgie in Syrien

Ein Ueberlick über die Pionierarbeit auf dem Gebiete der Chirurgie in Syrien wird geboten. Die Schwierigkeiten, die moderne Methoden im Kampfe gegen Vorurteile zu überwinden haben wird beschrieben. Der Autor gibt ein genaues Bild des Standes der Medizin im Beginne unseres Zeitalters.

SUMARIO

Precursores de cirugía en Siria

Una revista del esfuerzo en propagación de la cirugía es presentada. Las dificultades de establecer métodos modernos contra prejuicios estan en coacción, y un cuadro á pluma de la practica primitiva en Siria es presentado.

RIASSUNTO

Avanguardia di chirurgia in Siria

L'autore presenta un quadro della situazione della chirurgia in Siria e dà speciale attenzione alle difficoltà che si aveva da sormontare nella lotta contro la superstizione.

Dr. Clarence O. Sappington, of Chicago, received the first W. S. Knudsen award for the most outstanding contribution to industrial medicine during 1938-1939. The award was made on the basis of his book "Medicolegal Phases of Occupational Diseases. Mr. W. S. Knudsen, president of the General Motors Corporation, made the presentation at the annual meeting of the American Association of Industrial Physicians and Surgeons in Cleveland, June 7.

The University of Toronto Faculty of Medicine through its council has awarded the Charles Mickle Fellowship for 1939 to **Dr. Charles Herbert Best,** professor of physiology in the university, for his contributions to physiology,, especially those related to diabetes and carbohydrate metabolism, to histamine and histaminase, to choline and fat metabolism and to thrombosis and heparin. The award is the income from $25,000 requeathed by the late Dr. William J. Mickle.

ACTIVITIES OF MILITARY SURGEONS IN THE INTERNATIONAL CONGRESSES OF MILITARY MEDICINE AND PHARMACY*

WILLIAM SEAMAN BAINBRIDGE, A.M., Sc.D., M.D., C.M., F.I.C.S.,
CAPTAIN, M.C.-F., U. S. NAVY RESERVE

Member of the International Committee of Military Medicine and Pharmacy

NEW YORK

THE following peroration by the great Pasteur in concluding his remarks at the inauguration in November 1888 of the Institute that bears his name seems particularly appropriate:

> Two opposing laws seem to me now in contest. The one a law of blood and death, opening out each day new modes of destruction, forces nations to be always ready for the battle. The other a law of peace, work and health, whose only aim is to deliver man from the calamities which beset him. The one seeks violent conquests, the other the relief of mankind. The one places a single life above all victories, the other sacrifices hundreds of thousands of lives. The law of which we are the instruments strives even through the carnage to cure the wounds due to the law of war. Treatment by our antiseptic methods may preserve the lives of thousands of soldiers. Which of these two laws will prevail, God only knows. But of this we may be sure, that science, in obeying the law of humanity, will always labor to enlarge the frontiers of life.

AIMS OF CONGRESS

Inspired by these words, military surgeons for the past eighteen years have been organized in the International Congress of Military Medicine and Pharmacy, to "enlarge the frontiers of life" —to alleviate suffering, to cure disease, to save life and limb.

The late Albert the Good and Queen Elizabeth of the Belgians sponsored the first International Congress of Military Medicine and Pharmacy, which met in Brussels in 1921, and biennially thereafter in Rome, Paris, Warsaw, London, The Hague, Madrid, Brussels, Bucharest, and now in Washington and New York. The Congress since its first meeting eighteen years ago has progressed with such great strides that instead of the original twenty-one represented countries we now have twice that number. There has been not only this increase but also a widening of the scope of activities.

In the beginning the aim of the Congress was to collect, codify and standardize the lessons of the World War in medicine, surgery and sanitation in all their branches, from every side of the battle line. This was a departure from precedent, for previously medical history of wars dealt with each particular army or even with a given sector and so was limited to the experiences of a small group of military surgeons.

In Continental United States of America in 1937 approximately 10,000,000 disabling accidents occurred, 375,000 of which caused permanent injuries. In the same year there were 106,000 accidental deaths. These peacetime fatalities more than doubled in the twelve months of 1937 the number of American lives lost in our eighteen months of fighting in the World War, and the total number of accidental injuries that year was about two and one-half times the total number of American troops engaged in the war. These various peacetime accidents occurred in the course of day-by-day existence—from sea and railroad disasters, from fires, earthquakes, tornadoes and floods, from aviation and automobile accidents, in industries, construction work, manufacturing, mining, quarrying, in oil and gas wells, from accidental absorption of

* Presented at the Ninth Session of the International Office of Medico-Military Documentation of the International Congress of Military Medicine and Pharmacy May 15, 1939, Washington, D. C., and read by request at the International Assembly of the International College of Surgeons, New York, May 22, 1939.

poisonous gases, and even from what seemed to be minor accidents in the home.

The military surgeons are especially fitted by experience to aid those who suffer from the casualties of peace. Military surgeons, then, are united everywhere in peace and in war for the practical purpose of making and keeping the man power of the world fit for any national emergency and as worthwhile economic and social factors in their communities.

HISTORY

At the first meeting of the International Congress of Military Medicine and Pharmacy, the King of the Belgians appointed a Permanent Committee, which has been the central working and managing unit of the organization. It consisted of one representative from each of eight countries—Belgium, Great Britain, France, Spain, Italy, Brazil, Switzerland and the United States. Three of us who were on that original committee are still active in it —Colonel Jules Voncken, of Belgium, Colonel J. Thomann, of Switzerland, and myself. The Permanent Committee has met at each Congress and often in the year between. With the many additional countries joining the Congress, it has been decided to enlarge the Permanent Committee and to change its name to the International Committee of Military Medicine and Pharmacy, which was officially organized for the first time at the Tenth International Congress, held in Washington, D. C., May 7 to 15, 1939.

Under the management of this Committee, as was the case with the Permanent Committee, will be the organization of the Congresses, the publication of the *International Bulletin of Military Medicine,* the International Office of Medico-Military Documentation, relations with international organizations, and the Medico-Legal Commission.

As in a manufacturing plant the by-products are often of greater value than the original product and may bring in a large return, so it is with many of the offshoots of the International Congress. One of its most active and daily working branches is the International Office of Medico-Military Documentation, with headquarters in Liége, under the direction of Colonel Jules Voncken. This was created in 1930. Here are collected nonconfidential official documents of the medical services of the nations of the world, official medicomilitary periodicals, abstracts of articles on military medicine, original works, books on military medicine, unpublished material and the like. There is a bibliographic index, and those countries which subscribe to the Office are furnished any desired information at its command.

At the Seventh International Congress, held in Madrid in 1933, military surgeons invited experts in international law to join in the sessions. At the same meeting the Principality of Monaco was represented for the first time. As a result of the reports he received from his delegate, Prince Louis II of Monaco became keenly interested in the work, particularly with regard to three points which had special reference to future wars. These had been discussed by the Permanent Committee and the international jurists. They were: (1) the creation of medical towns or districts, (2) the ratification of the Geneva convention and (3) protection of the civilian population. The Prince of Monaco invited the Permanent Committee and a number of leaders in international law to his Palace for a week's conference. From this was born the Medico-Legal Commission, which has as its objective the lessening of the horrors of war and the protection of noncombatants. A natural outcome of all these conferences was the Pact of Monaco, a plan which was submitted to the International Red Cross and was

most sympathetically received, especially with reference to the protection of the civil population. It covers the five following main points: 1. Organization of medical towns and zones. 2. Medical assistance by nonbelligerents. 3. Treatment of prisoners of war. 4. Measures applicable in case of violations of the convention. 5. Protection of civil population.

There was formed at the Eighth Session of the International Office of Medico-Military Documentation, which met in the Grand Duchy of Luxemburg in July 1938, an International Committee of Information and Action for the Protection of the Civil Population in Time of War, under the patronage of the Grand Duchess of Luxemburg, with the Prince of Luxemburg as President, and His Excellency Joseph Bech, the Minister of Foreign Affairs, as Vice President. By an agreement between the Executive Committee of the International Law Association and the Permanent Committee of the Congress, a day was given to the consideration of the question of aerial bombardment from the standpoint of international law. Studies are being made along this and other lines of protection of the civil population during war with the collaboration of the International Law Association, and a quarterly journal is being published in Luxemburg.

SUMMARY AND CONCLUSIONS

The aims, history and activities of the International Congress of Military Medicine and Pharmacy, composed of military surgeons of many nations, are outlined. As we contemplate the future of this movement we can envision in the wider horizon of tomorrow other branches that may bring fruition in many fields. Before long some of the plans which resulted from the meeting at Luxemburg in the summer of 1938 for the enlargement of one line of practical endeavor will be brought to our attention. Here is an opportunity for the American peace organizations to take an active interest and play an important and telling rôle in this troubled world.

RÉSUMÉ

Les activités du Congrès International de Médecine et de Pharmacie Militaires

Dans cette communication on trouve décrit les buts, l'historique et les activités du Congrès International de Médecine et Pharmacie Militaires.

ZUSAMMENFASSUNG

Bericht vom internationalen Kongress für Militärmedizin und Heilmittelkunde

Ziel, Geschichte und Aktivität des Internationalen Kongresses für Militärmedizin, an dem Militärchirurgen aus vielen Länden teilnahmen ist geschildert.

SUMARIO

Actividades del Congreso Internacional de Medicina y Farmacia Militar

La mira, historia y actividades del Congreso Internacional de Medicína y Farmacia Militar, compuesto de cirujános militares de muchos paises, está mostráda.

RIASSUNTO

Resoconto del Congresso Internazionale di Medicina é Farmacologia Militare

Lo scopo, la storia e le attivitá del Congresso Interzionale di Medicina Militare al quale parteciparono molti chirurgi militari viene descritto.

REVIEW OF SCIENTIFIC EXHIBITS

S. J. TUREL, M.D., F.I.C.S.
NEW YORK

ONE of the noteworthy features of the International Assembly of the International College of Surgeons was the scientific exhibits, which were well arranged, and characterized by their excellence and important educational value.

CASTS, DRAWINGS, LANTERN SLIDES

Among the outstanding exhibits, which drew many favorable comments, was that of Dr. William Seaman Bainbridge. His collection of wax casts, replicas of actual conditions in natural color of his private and hospital cases, is a most unusual and valuable addition to the science of medicine. About 500 of these casts were on display. They showed such conditions as syphilis, carcinoma, epithelioma, lichen planus, sarcoma, leukoplakia, keloid, mixed lesions, tuberculosis, congenital deformities, leprosy, epulis, scurvy and supernumerary breasts. Many of the casts illustrated the condition before and after treatment.

In addition to the foregoing, there were drawings, some in color, by an anatomic artist, who sketched them at the time of operation by Dr. Bainbridge. These illustrated unusual pelvic and abdominal conditions. Limited space permitted the display of only a few of the 1,500 of such drawings of his private and hospital cases. It is hoped that there will be an opportunity for a special showing of all the drawings in Dr. Bainbridge's collection, for they are of distinct value to the surgeon and to the student.

Lantern slides of tumor formation in the mineral, vegetable and animal kingdoms, and allied diseases were the third and final part of this extremely interesting exhibition.

MEDICINE DRAMATIZED

"Thoughts for Tomorrow," by Dr. Norman R. Goldsmith, was a unique presentation of ten large colored cartoons presenting a new technic for dramatizing development in medicine and surgery. They illustrated some of his "Thoughts for Tomorrow," a weekly column completing its fourth year in the *Pittsburgh Medical Bulletin*, the official publication of the Allegheny County Medical Society.

The purpose of "Thoughts," Dr. Goldsmith said, "is to save busy doctors' time. Unable to read all the medical literature, one quick glance will give them essential information in an easily seen and remembered form." His procedure is to comb the medical literature, often research journals missed by the average practitioner, select some potentially significant article, condense it to its salient features and then dramatize it.

Transformed into a cartoon plus a caption, the message is quickly appreciated by the medical reader, yet is sufficiently distinctive to be long remembered. The entire message is given in a few words with a startling picture to clinch the memory thought image.

GASTRO-INTESTINAL SUTURES

Dr. Simon Reisler, of Indianapolis, with the aid of several colored drawings, presented his "continuous reverse-crossed suture—a new method of gastro-intestinal suturing." He criticizes the usual through and through suture, which is commonly employed in gastro-intestinal surgery, as being inadequate. He has developed what he calls the continuous reverse-crossed suture for the suturing of the stomach and the intestines in anastomosis or closure of these viscera. This stitch is employed as the innermost suture, which, he points out, is the most important layer, protecting the seromuscular suture, and, if properly made, should give thorough approximation, thereby avoiding such complications as postoperative hemorrhage, tissue necrosis, leakage and peritonitis. The latter are avoided by his method of suture.

PERITONEOSCOPY

"Peritoneoscopy," presented by Dr. John C. Ruddock and Dr. Maurice L. Malins, is a highly important method of diagnosis of intra-abdominal lesions. The technic was clearly described by the authors with the aid of illustrations and charts.

Their statistical data cover a series of 900 cases, with a mortality of 0.1 per cent, the youngest patient described being 6 months old and the oldest 85 years old. The procedure is performed in an operating room under local anesthesia, under strict surgical asepsis with proper preoperative preparation, and preliminary catheterization of the urinary bladder.

After introduction of the peritoneoscope, any fluid present is aspirated, and the peritoneal cavity is filled with air. Through this instrument one is able to examine the whole of the peritoneal cavity with the exception of retroperitoneal structures and the pylorus of the stomach, and to differentiate various pathologic lesions present; to obtain biopsies of solid organs

only, and to aspirate liver abscesses. This is the method of choice as a diagnostic procedure in cases of indeterminate ascites.

The contraindications to the method, such as the acute abdomen, intestinal obstruction, etc., are enumerated. The procedure is simple, painless and safe, enhances other diagnostic procedures, and, as stressed by the authors, does not replace surgical intervention.

CARCINOMA OF THE CERVIX

"Cervical Carcinoma" by Dr. J. William White of Scranton, Pa., was an interesting exhibit with the aid of drawings, statistical data, and models demonstrating the four grades of carcinoma of the cervix. The incidence, etiology, classification, pathology, mode of spread and different therapeutic appliances were presented.

Early diagnosis was strongly stressed. Dr. White pointed out that, unfortunately, most patients are beyond the operable stage at the first examination. He recommends only radium as the method of choice in the treatment of this disease, which is supplemented with high voltage roentgen therapy, except in grade one, when the latter is not used. Hysterectomy is recommended only in the presence of persistent pyometria.

PLASTIC SURGERY

"Skin Grafting and Plastic Surgery," by Dr. Maxwell Maltz, of New York, consisted of photographic pictures demonstrating various types of plastic operations, and skin grafting before and after surgical intervention, showing excellent cosmetic and functional results.

Dr. Jacob Sarnoff, of Brooklyn, showed colored photographs and plaster models of many types of plastic surgery, also a series of pictorial surgical clinics demonstrating different stages of plastic procedures.

BLOOD TRANSFUSION

The "Blood Transfusion Betterment Association of New York City" is an organization founded in 1928 and is an expansion of the Cooperative Blood Donors Bureau. Its exhibit was an extremely interesting one, and with the aid of charts and statistics revealed the tremendous value this organization is to the community by supplying healthy blood donors in the metropolitan area. This service is available to all hospitals and physicians, thereby protecting the patient from receiving incompatible or diseased blood, or blood of an inferior quality, also protecting the donor from ruthless exploitation. Accidental deaths due to transfusions were discussed, and it was disclosed that incompatibility was responsible for more than 50 per cent of transfusion accidents. Prior to this time, many commercial agencies were operating whose standards as to the fitness and health of their donors were more or less lax.

The Association is controlled by a board of trustees of nine members, most of whom are physicians and hospital executives; also a board of medical control of thirteen physicians consisting of experts in hematology. Research and educational activities are supported. A donor member must conform to the strict requirements of the sanitary code of the Department of Health of New York City, must have frequent physical examinations, must be free from contagious and infectious diseases (especially syphilis, malaria and tuberculosis), and have a negative history of allergy, epilepsy, drug addiction and alcoholism; must have a hemoglobin content of at least 88 per cent, and must submit to a Wassermann test every three months and a Kahn test before each transfusion. He must rest one week for every 100 cc. of blood given.

The popularity of the association is evidenced by its rapid growth, the number of donors having tripled from 1930 to 1937.

MOTION PICTURES

A feature of the congress which evoked continued interest was the projection of colored motion pictures—in some cases with sound—showing various types of surgical operative procedures. These films were produced under the auspices of Davis & Geck, and combined the exhibits of the Anglo-French Drug Co. and E. Fougera & Co. (Medical Film Guild) with the private exhibits of Dr. Fred H. Albee, Dr. Jacob Sarnoff and Dr. Morton Berson.

Of particular interest were the motion pictures of Dr. Albee, who offered striking colored films of different types of orthopedic operations, especially in bone grafting and reconstructive surgery.

Of the numerous motion pictures shown by the Medical Film Guild, some of the outstanding ones were "Uterosalpingography," by Dr. Julius Jarcho, "Sterilization of the Uterine Cornu," by Dr. Mortimer N. Hyams, and "Peri-Urethral Phlegmon," by Dr. Max Rohde.

The surgical technic depicted by these colored films is much clearer than can be obtained from a crowded amphitheatre, and demonstrates their use as a valuable educational medium.

COMMENT

These scientific exhibits were enthusiastically received, and well attended by the Fellows and Members of the College and their guests. Future meetings should encourage more exhibits of such high caliber.

INTERNATIONAL ASSEMBLY OF THE INTERNATIONAL COLLEGE OF SURGEONS

IN CONJUNCTION WITH

THIRD ANNUAL ASSEMBLY OF THE UNITED STATES CHAPTER

New York, May 21-25, 1939, Roosevelt Hotel

ANDRÉ CROTTI, M.D., *International President*

FREDERICK M. DOUGLASS, M.D., *President, United States Chapter*

SCIENTIFIC PAPERS

Monday, May 22, 10:00 a. m.

ANDRÉ CROTTI, M.D., *International President, Presiding*

INVOCATION. THE REVEREND NATHAN A. SEAGLE, Rector of St. Stephen's Church, New York City. Assembly led in prayer.

SENATOR THOMAS IGNATIUS SHERIDAN, of the State of New York, then addressed the Assembly.

SENATOR THOMAS IGNATIUS SHERIDAN: It would be presumptuous on my part to attempt to discuss the details of your profession, except in an incidental fashion. Once one comes under the spell of either a medical man or a surgeon—whether one is fully conscious or whether one is under the immediate effects of an anesthetic—one is nothing more than a pawn in his hands, whether one is a lawyer, a former senator or any other member of the community. The surgeon has the faculty of applying an anesthetic without making one know it, and that is what happened to me. Before being aware, I found myself addressing you.

Your motto "Science knows no country," I dare say is no more typified by any place in this country than by New York City. I hope you will enjoy your stay, and that you will not confine your investigations to the hospitals. I wish you a hearty welcome to New York City and to New York State.

His Excellency DR. FRANCISCO CASTILLO NÁJERA, Ambassador from Mexico, was then introduced.

DR. FRANCISCO CASTILLO NÁJERA: I greet you in the name of the Mexican delegation. It is my great pleasure to meet many of my countrymen here. It is to them, who are in full practice and active in surgery, that the task of advancing Mexican surgery belongs. I greet you in the name of the Mexican scientific societies to which I belong, the National Academy of Medicine, the Mexican Academy of Surgery, and others. Let us hope that science will be the strongest link between our nations.

PRESENT DAY TRENDS OF SURGERY IN PULMONARY TUBERCULOSIS. DR. CONSTANTIN ILIESCU, Inspector General, Medical Service, Rumanian Army, Bucharest, Rumania.

This paper will appear in a later issue.

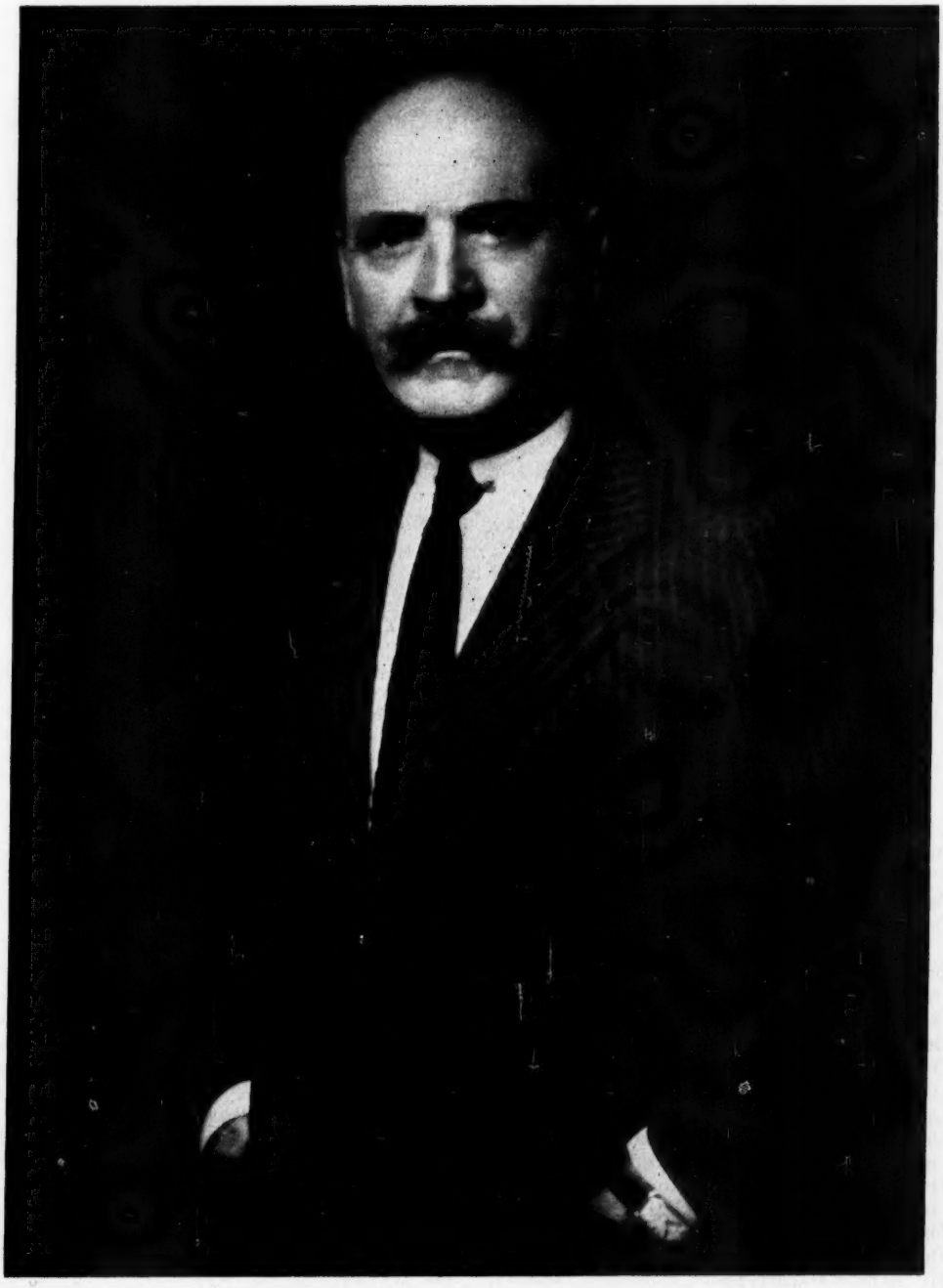
ANESTHESIA IN THE UNITED STATES NAVAL SERVICE. DR. ROSS T. McINTIRE, Rear Admiral, Surgeon General, United States Navy.

Read by DR. D. G. SUTTON, Captain, United States Navy. This paper appears elsewhere in this issue.

THE IMPORTANCE OF THE CADAVER IN SURGICAL TEACHING. DR. MIGUEL LÓPEZ ESNAURRÍZAR, Mexico City, Mexico.

This paper will appear in a later issue.

DR. MAX THOREK, M.D., *International Secretary, in the Chair*



André Crotti, M.D., LL.D., F.A.C.S., F.I.C.S.,
International President of the International College of Surgeons.

THE SURGICAL TREATMENT OF GASTRODUODENAL ULCER BY SUBTOTAL GASTRECTOMY. DR. JOSÉ LASTRA CAMPS and CAPTAIN ANTONIO M. RODRIGUEZ DIAZ, M.D., Havana, Cuba.

Read by Dr. Conrado Nuñez, of Havana, Cuba. This paper will appear in a later issue.

Monday, May 22, 2:15 p. m.

ANDRÉ CROTTI, M.D., *International President, Presiding*

ACTIVITIES OF MILITARY SURGEONS IN THE INTERNATIONAL CONGRESSES OF MILITARY MEDICINE AND PHARMACY. DR. WILLIAM SEAMAN BAINBRIDGE, New York.

This paper appears elsewhere in this issue.

THE SURGICAL RECONSTRUCTION OF THE ARTHRITIC PATIENT. DR. FRANK D. DICKSON, Kansas City, Mo.

This paper will appear in a later issue.

OPERATIVE CHOLANGIOGRAPHY: ITS CONTRIBUTION TO THE PHYSIOPATHOLOGY OF THE COMMON BILE PASSAGES (illustrated with lantern slides). DR. P. L. MIRIZZI, Córdoba, Argentina.

This paper appears elsewhere in this issue.

COMMON DUCT INJURIES: CAUSATION AND REPAIR (illustrated with lantern slides). DR. THOMAS E. JONES, Cleveland.

This paper appears elsewhere in this issue.

GENESIS OF ELECTROSURGERY. DR. JOSEPH RIVIÈRE, Paris, France.

This paper will appear in a later issue.

INVOLUTION OF THE CURVATURE OF THE STOMACH AS A COMPLICATION OF CHRONIC GASTRIC ULCER (illustrated with lantern slides). DR. Y. SEUDERLING, Helsinki, Finland.

This paper will appear in a later issue.

CONVOCATION

Monday, May 22, 9:30 p. m.

FREDERICK M. DOUGLASS, M.D., *President, United States Chapter, Presiding*

Dr. Benjamin I. Golden, of Elkins, W. Va., Grand Marshall, led the academic procession for the induction and reception of degrees.

The Reverend Norman Vincent Peale, D.D., Pastor of the Marble Collegiate Church, New York City, offered the invocation.

ADMISSION OF CANDIDATES

Dr. Edward Frankel, Jr., of New York City, Executive Secretary, presented the candidates for Associate Membership, Membership and Fellowship.

ADMITTED TO FELLOWSHIP — UNITED STATES CHAPTER

Dr. Donald Taylor Atkinson, San Antonio, Texas.
Dr. William T. H. Baker, Pueblo, Colo.
Dr. George William Bancroft, Colorado Springs, Colo.
Dr. Hugh Gibson Beatty, Columbus, Ohio.
Dr. Ralph S. Breakey, Monticello, N. Y.
Dr. Thomas Frederick Broderick, Boston.
Dr. Harry Lewis Brooks, Michigan City, Ind.
Dr. Robert King Buford, Charleston, W. Va.
Dr. Earl L. Caddick, Quincy, Ill.
Dr. Anthony Joseph Cardinale, Brooklyn.
Dr. William J. Carrington, Atlantic City, N. J.
Dr. Earle L. Creveling, Reno, Nev.
Dr. Hugh Vincent Fall, Roswell, N. M.
Dr. George William Finke, Hackensack, N. J.
Dr. Egon Walter Fischmann, Chicago.
Dr. George Sanford Foster, Manchester, N. H.
Dr. Albert Dalbey Frost, Columbus, Ohio.
Dr. Dewell Gann, Jr., Little Rock, Ark.
Dr. Ralph Averill Gowdy, Miami Beach, Fla.
Dr. Walter R. Griess, Cincinnati.
Dr. Edwin Albert Griffin, Brooklyn.
Dr. Eugene Campbell Hartman, Parkersburg, W. Va.
Dr. Otto Rudolph Holters, Asbury Park, N. J.
Dr. Charles Elmer Holzer, Gallipolis, Ohio.
Dr. Julius Jarcho, New York.
Dr. William Jepson, Sioux City, Iowa.
Dr. George Herman John Joost, DeKalb, Ill.
Dr. Henry Dowling Jordan, Allentown, Pa.
Dr. Homer David Junkin, Paris, Ill.
Dr. Fred Oscar Kettelkamp, Colorado Springs, Colo.
Dr. Louis F. Knoll, Brooklyn.
Dr. Edward Bloomfield Liddle, Colorado Springs, Colo.
Dr. Goethe Link, Indianapolis.
Dr. William Randolph Lovelace, Albuquerque, N. M.
Dr. Oswald Swinney Lowsley, New York.
Dr. Maxwell Maltz, New York.
Dr. Charles Edward Nagel, Great Falls, Mont.
Dr. William Alfred Neill, Toledo, Ohio.
Dr. Robert M. Rogers, Brooklyn.
Dr. Milton M. Rosenberg, Scranton, Pa.

Dr. William Harold Ryder, New Haven, Conn.
Dr. Joseph Frederick Saphir, New York.
Dr. John Hubley Schall, Brooklyn.
Dr. Lewis Frederick Smead, Toledo, Ohio.
Dr. Horace Edward Turner, Chicago.
Dr. Roy Upham, New York.
Dr. Leopold Vaccaro, Philadelphia.
Dr. Earl LeGrand Ward, Sante Fe, N. M.

Convocation of the International College of Surgeons during the International Scientific Assembly, Hotel Roosevelt, New York City, May 22, 1939.

Dr. Edwin J. Stedem, Columbus, Ohio.
Dr. Charles Walker Streamer, Pueblo, Colo.*
Dr. Ford Moore Summerville, Oil City, Pa.
Dr. Wells H. Teachnor, Columbus, Ohio.
Dr. Clarence William Trexler, Honolulu, T. H.
Dr. Solomon J. Turel, New York.
Dr. Leigh F. Watson, Los Angeles.
Dr. Randolph Edwin Watts, Silver City, N. M.
Dr. Thomas Wheeldon, Richmond, Va.
Dr. James Norman White, Scranton, Pa.
Dr. Henry Ward Williams, Rochester, N. Y.
Dr. John M. Wilson, Mobile, Ala.
Dr. Howard Haynes Yoakem, Columbus, Ohio.

ADMITTED TO MEMBERSHIP — UNITED STATES CHAPTER

Dr. A. Henry Arp, Moline, Ill.
Dr. Elmer James Ball, Los Angeles.
Dr. Andre B. Carney, Tulsa, Okla.
Dr. John William August Emhardt, Indianapolis.
Dr. Bliss L. Finlayson, Price, Utah.
Dr. Joseph F. Gennaro, Brooklyn, N. Y.
Dr. Edmund C. Hessert, Camden, N. J.
Dr. Hannibal Jaworski, Waco, Texas.
Dr. Eugene Anthony Ockuly, Toledo, Ohio.
Dr. Robert Charles Olney, Lincoln, Neb.
Dr. George Otto Pobe, Port Jervis, N. Y.
Dr. Robert L. Preston, New York.
Dr. Wade Sisler, Tulsa, Okla.
Dr. Alan Leo Sparks, Indianapolis.
Dr. Harry Charles Stein, New York.
Dr. Harry Subin, Atlantic City, N. J.

ADMITTED TO ASSOCIATE MEMBERSHIP — UNITED STATES CHAPTER

Dr. Daniel George Arnold, Bucyrus, Ohio.
Dr. Warren Austin Baird, Toledo, Ohio.
Dr. Arthur Ray Beyer, Tampa, Fla.
Dr. James Ivor Collins, Toledo, Ohio.
Dr. William John Connelly, Carnegie, Pa.
Dr. William Latimer Cooke, Charleston, W. Va.
Dr. Samuel Dubin, Brooklyn.
Dr. Hazen L. Hauman, Toledo, Ohio.

* Dr. Streamer died July 5, 1939.

Dr. Mortimer M. Kopp, Brooklyn.
Dr. Edward L. Lebold, Salem, Ore.
Dr. William Harold Meffley, Toledo, Ohio.
Dr. Nathan L. Shulman, Union City, N. J.
Dr. Oney P. Smith, Troy, N. Y.
Dr. Nicholas S. Vitale, St. Louis.
Dr. Samuel David Zuker, Toledo, Ohio.

PRESIDENTIAL ADDRESS BY DR. FREDERICK M. DOUGLASS

OF this College it might be said with perfect truth that from among the many who aspire to the honors of membership only a few are called and fewer still are chosen.

It is not enough that a man be able to handle knife and suture with godlike cunning. We demand the utmost skill of him, but we demand much more than that. We look beyond skill to the hands that wield skill. And if those hands are blameless and clean, we search beyond them. We search for the pure heart and principled brain

Frederick M. Douglass, M.D., F.A.C.S., F.I.C.S., President of the United States Chapter of the International College of Surgeons.

It bestows nothing as a gift of hand. Upon its every rank, upon the associate memberships, the memberships, and doubly upon the fellowships, there is a price that only a few surgeons may hope to pay.

that exemplify—as nearly as it is possible for imperfect man to exemplify such moral grandeur—the Oath of Hippocrates.

Our price is Integrity.

Our price is a life dedicated to the faith that

has established Medicine as a living force in a living world. Our price is a token that the glorious past of surgery shall be transmitted intact and with increment to those who are to follow us.

Indifferent to border, creed or race this College stretches forth its hand to gather the Big Man of surgery into the company of his fellows.

We seek the man whose pity is as vast as human suffering.

We seek the man whose passion to learn is as great as his distrust of ignorance.

We seek the man who honors the past by living in the present for the future.

We seek the man who fears nothing so much as standing still.

We seek the man who, knowing the way, dares to lead the way.

We seek the man who in the dignity of his greatness counts it no shame to confess his imperfection and repair it.

Some one has said that the first duty of excellence is to perpetuate itself. That, I submit, is a saying which the International College of Surgeons might well take as a motto. In a very few words it beautifully describes the particular field of endeavor we have appropriated for ourselves.

Doctor Crotti said the same thing in his presidential address last year. The International College of Surgeons, he told us, does not desire to have the outstanding surgeons of the world upon its roster merely as fellows. It wants fellows who by the explicit conditions of their fellowship will act as mentors and educators for the rising generation of surgeons.

I say again: "The first duty of excellence is to perpetuate itself."

This College is no haven of rest from great labors, no mutual admiration society in which fine birds may display their fine feathers in the company of their equals.

Woe to those who think that the claim upon them is ended with the writing of a check and receiving the credentials of membership. No!

As long as any of us have anything worthy of place in the treasure house of surgical knowledge, the claims will never cease. In our Guilds, in correspondence, in publication, in chapter meetings, in the Congresses of the International College—wherever and whenever two or more meet to exchange ideas—there the College will lodge its claims.

Let it be said to the glory of our candidates tonight that their very presence here betokens their willingness to pay the price.

For the prestige of surgery, for the greater happiness of mankind everywhere, they pledge themselves to live and work.

In this they honor us.

For this we honor them.

The physician is a man apart, and in the world of his labors he is a god, proposing and disposing. But for all that he, too, is only mortal.

He is born, he lives, he dies. Out of nothingness he comes and into nothingness returns, and only the Great Architect may say what end he serves in the inscrutable pattern of eternity.

You and I may *speak* of many things with the finality of absolute knowledge, but we have lived and worked too long with Death to guess at the intentions which called the race of man into being and set us all at the tasks we do.

It may be that the doubters have prophesied aright, that human life is a paltry incident in a pointless universe. It may be that this world of ours is, after all, no more than a "tale told by an idiot."

For all I know, the ends to which you and I so solemnly address ourselves may lead exactly nowhere.

I dare to hope that the doubters are at error. And yet, if one of them should present to me an indisputable proof that life and mankind bear no meaning, I know that I could face the appalling fact undaunted and go serenely forward in the course I follow now.

With or without the promise of eternity, with or without the faintest token that any lasting significance can attach to the things I am and the things I do, I would not alter my destiny.

For me, it is enough that I am a physician, a surgeon, a seeker after truth, a minister to the suffering of my fellows, a willing subscriber to the lofty scruples of Hippocrates.

It is enough that I may be one of you.

For Medicine is more than occupation, more than art, more than science, much more than codes and traditions.

It is a way of life, and more than that, it is a faith the articles of which encompass and vitalize every creed that the hungering heart of man has ever spun to explain himself on the stage of the universe.

Let us in these few moments tonight discover again the bedrock on which our temple of Medicine is builded. Let us look upon the eternal verities of our calling and dedicate ourselves anew to them.

They were the faith of your predecessors. Doubt if you will, they are still the faith of your contemporaries, as they will be the faith of your successors.

Whosoever shall honor them in thought and action, his work shall not perish.

ANDRÉ CROTTI, M.D., *International President, in the Chair*

PRESIDENT CROTTI welcomed the new Members and Fellows and stressed their obligation to surgery and mankind at large. Presentation of diplomas.

MESSAGES

DR. MAX THOREK, International Secretary, read the following messages.

Greetings to the International College of Surgeons from Past-President Prof. DR. ARNOLD JIRÁSEK, of Prague, Czechoslovakia:

"I am sorry, indeed, not to be able to participate personally in the activities of this meeting, which offers such a splendid opportunity of being in touch with so many distinguished representatives of surgery. Despite this, I wish to express my profound respect for your work and my appreciation to those who are endeavoring to raise the standards of the world's surgery, which is influencing the growing generation. This has always been proof of your spirit and pioneer work.

"Wishing the Assembly and its activities all success and extending to you my kindest thoughts and friendly remembrances and with most cordial greetings."

Greetings from DR. J. C. MCCRACKEN, from Shanghai, China, who is our Regent in that part of the world, who writes and requests that his best wishes be extended for a successful meeting.

PROF. DR. JORGE E. CAVELIER, Dean of the Faculty of Medicine, of Bogota, Colombia, cordially greets the Members of the International College of Surgeons and expresses wishes that the work and humanitarian aims which primarily guide this meeting will be crowned with complete success and will redound to the benefit of the medicosurgical sciences.

DR. PROBODH CHANDRA DAS, of Calcutta, India, writes as follows:

"The International College with its high ideals is sure to become an influential organization and in the very near future will undoubtedly play a leading rôle in the advancement of the knowledge of different branches of surgery with a view of minimizing the sufferings of humanity.

"I send from my sick bed in this distant land of India my sincere wishes for the success of this momentous Assembly meeting."

PROF. DR. ALEXANDER STANISCHEFF, Director of the University of Sofia, Sofia, Bulgaria, writes:

"It is with great regret and much distress that I find I shall be unable to be with you and among my fine American colleagues, whose aims to cultivate the best in our profession are observed by me.

"I personally regret sincerely, as does our University also, that you who do such honor to our profession cannot participate in the celebration of the fiftieth anniversary of our beloved University. However, we believe, and are sure that you do also, that in spite of the impossibility of direct personal participation, our hearts will be very close in these hours and days of celebration, both during the ceremonies here and during the scientific sessions of the International College of Surgeons.

"We are assured that you will continue in the future to work not only for the advancement of pure science and art but also in the cultivation among the people of those feelings and virtues which will ultimately give to mankind the desired peace and tranquility."

PROF. DR. RUDOLF NISSEN, of Istanbul, Turkey, Vice President of the International College of Surgeons, cables best wishes for the success of the Assembly meeting of the International College of Surgeons.

PROF. DR. FELIX MANDL, of Palestine, Jerusalem, cables his greetings and sincerest good wishes to the Fellows and Members of the International College of Surgeons in session in New York City.

MEXICAN CHAPTER

DR. MANUEL A. MANZANILLA, of Mexico City, Mexico, presented for admission to the College the newly organized Mexican Chapter.

ADDRESS BY DR. MANUEL A. MANZANILLA

The aboriginal people of Mexico, because of their civilization, laws and government, were considered the most outstanding people in the American Continent, before the discovery of the New World. But, notwithstanding all that is said to proclaim their high level of culture, this was almost nil as compared with the powerful civilizing influence presently brought about by the Conquest. I believe, with the new Mexican generation which has happily lived under the limpid sky of our past and has nourished its mind on the reminiscences of our ancestry, that Hernán Cortés, the Conquistador, is the greatest figure in our history, the creator of our nationality. The legacy received by Mexico when acquiring its independence, inheritance which was indeed the fructification of the work performed by that Great Captain, consisted of a territory ten times as large as that which constituted the kingdom

of Montezuma, including all the vassal provinces: a country with its individual personality, a country to which Spain, builder of nations, had, as its mother country, given its best. The ancient, immense Latin culture had come to us through the means of conquering Spain.

The Conquest was begun in 1519 and consummated in 1521. Almost at once, in 1524, the Conquistador founded the "Hospital de la Purisíma Concepción y Jesús Nazareno," on the memorable site called Huitzillan, where he and Montezuma had their first meeting. The Hospital de Jesús, as it called nowadays, is the oldest institution in America built for the purpose of assisting the poor and relieving suffering.

Fourteen years after the Conquest was consummated, in 1535, don Antonio de Mendoza, the first viceroy, brought to Mexico the first printing press that operated in the whole of the Americas, one hundred and five years before the printing press began to operate at Cambridge.

On Jan. 6, 1536, the College of Santa Cruz de Tlaltelolco was inaugurated, the curriculum of which included a course in medicine.

In 1551 a royal decree was issued ordering the founding of the Royal and Pontifical University of Mexico, with the same privileges and statutes as Salamanca University, at the time the best university in Spain and one of the greatest institutions of learning in Europe. The University of Mexico was the first in America, in accordance with the royal decree ordering its creation, dated Sept. 21, 1551. The college was opened on Jan. 25, 1553, and, to quote Clavijero, the historian, on that account men of great wisdom and learning were sent from Spain. On June 21, 1578, the University created a specialized course in medicine. In 1621 the course in surgery and anatomy was initiated at the request of Dr. Rodrigo Muñoz, in accordance with the royal decree of Philip III.

During the eleventh, twelfth, thirteenth and fourteenth centuries, science and the specialized branch of medicine reached their highest peak, attaining their grandest splendor. Spain was then, say Chinchilla and Zamacois, the metropolis and the retreat of all studious men, the mecca of those whose aspirations and ambitions were to acquire wisdom. The fifteenth and sixteenth centuries are most memorable in Spanish history, for in them arms and letters shone supreme. Progress of medicine was due to a considerable extent to the Spaniards. By the end of the seventeenth century, Spain was the vanguard among all countries in regard to the science of medicine, and in the eighteenth century had a prominent place in the list of the most advanced nations. The Mexican *protomedicatus* had in the seventeenth century similar organization and like function as the *protomedicatus* of Castille.

In Spain the first college of surgery was founded in Cádiz, between 1747 and 1748; the second institution of its kind was the one at Barcelona, in 1760, and the third was New Spain's, located in the City of Mexico, capital of the viceroyship, the first in America and a

MANUEL A. MANZANILLA, M.D., F.I.C.S., Honorary Fellow and National Regent, Mexican Chapter of the International College of Surgeons.

noteworthy distinction to New Spain. In 1768 Charles III signed the royal decree ordering the creation of the Royal College of Surgery of New Spain, which was inaugurated on April 10, 1770, having at its disposal for the purpose of teaching the Royal Hospital, built in 1534. The Royal Hospital was in existence for two hundred years, up to 1787, when Archbishop Núñez de Haro y Peralta incorporated it in the Hospital de San Andrés, the forerunner of the present General Hospital of Mexico.

Charles III of Spain enacted by decree the writing of statutes and by-laws for the New Spain Royal College of Surgery, which were printed successively in Madrid (1791), Barcelona (1799) and Mexico City (1799). A leather-bound copy of this historical document is kept at the library of the School of Medicine in Mexico City. Dr. Fernando Ocaranza justly believes

that the Faculty of Medicine of today comes in direct line of descent from the Royal College of Surgery.

During the second half of the past century there flourished in Mexico City the Larrey Society, of which our eminent surgeon Montes de Oca was a member, and in the dawn of the twentieth century brilliant achievements were attained by the Mexican Society of Surgery, two of the initiators of which were don Julián Villareal and don Ulises Váldes, who later were among those who laid the foundations of the present Academy of Surgery, the supreme national institution which now serves as the intellectual guide, to enlighten the path, support and cultivate the art of surgery, under the roof of our Alma Mater, the long-lived School of Medicine.

Mexico possesses its own surgical history. Endowed by Destiny with ancient disciplines and restless, ardent desires, it is deeply grateful for the honor bestowed upon it by this most learned International College of Surgeons, in reserving a place for Mexican members. The Mexican Chapter was initiated under the chairmanship of Dr. Gonzalo Castaneda, eminent master, who was also the president of the Mexican Academy of Surgery on its founding.

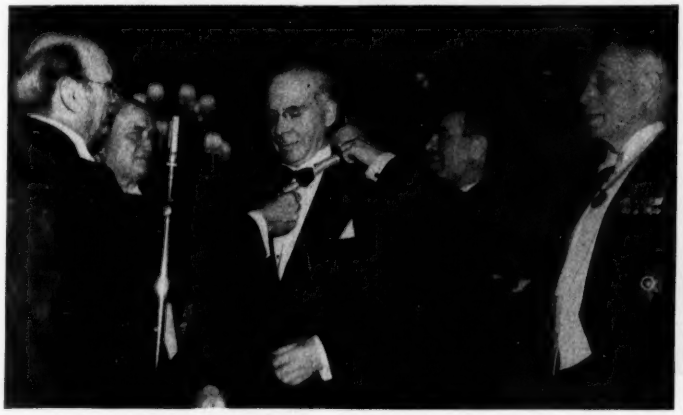
A representative group of Mexican surgeons take part in the International Assembly of the College held in this great country, in this magnificent city of New York, imperial because of its might, admirable because of its endeavor, a group of surgeons representative of the ancient culture of a young nation that perpetuates the tradition of Alonso Quijano, the Virtuous, immortal figure of Cervantes' romance of chivalry and knight-errantry. Latin we are by heritage, but universalist by tradition. Thus, under the guardianship of the noble aphorism of Pasteur which has become the ideal of the College, accept as a token of cordial friendship our warm greeting with our most earnest desires for the everlasting glory of this illustrious institution; *La science n'a pas de patrie parce que le savoir est le patrimoine de l'humanité, le flambeau qui éclaire le monde.*

Distribution of diplomas to the Mexican Chapter, by Dr. Francisco Castillo Nájera, Ambassador from Mexico.

Committee of the Mexican Chapter of the International College of Surgeons and officers. Seated, from left to right, Dr. Albee, Dr. Thorek, His Excellency the Ambassador from Mexico, Dr. Castillo Nájera, Drs. Crotti, Bainbridge and Lapenta. Standing, Drs. Rábago, Morones Prieto, Manzanilla, López Esnaurrízar, Lagarde and Torres Estrada.

ADMITTED TO FELLOWSHIP — MEXICAN CHAPTER

Dr. Donato G. Alarcón.
Dr. Abrahim Ayala González.
Dr. Rodolfo Ayala González.
Dr. Benjamín Bandera.
Dr. Luis Rivero Borrell.
Dr. Matías Carrasco y de Mier.
Dr. Luis Carrillo Azcárate.
Dr. Gonzalo Castañeda (Hon.).
Dr. Francisco Castillo Nájera (Hon.).
Dr. Juan Farill.
Dr. Darío Fernández Fierro.
Dr. Francisco Fonseca García.
Dr. Avelino Gavaldón Salamanca.
Dr. Eduardo Gómez Jáuregui.
Dr. Guillermo Lagarde.
Dr. Alejo Larrañago.
Dr. Miguel López Esnaurrízar (Hon.).
Dr. Manuel A. Manzanilla (Hon.).
Dr. Manuel Martínez Suárez.
Dr. Manuel Matos.
Dr. Ignacio Millán.
Dr. Juan Mora y Ortiz.
Dr. Federico J. Molas Oliveras.
Dr. Ignacio Morones Prieto.
Dr. José Ortíz Tirado.
Dr. José Rábago.
Dr. Octavio Rojas Avendaño.
Dr. Antonio Torres Estrada.
Dr. Mariano Vásquez.



Investiture and conferring of Honorary Fellowship on Dr. J. R. Goodall, of McGill University, Montreal, Canada.

Investiture and conferring of Honorary Fellowship on Dr. Miguel López Esnaurízzar, of the Mexican Academy of Surgery.

MESSAGES FROM COLOMBIA

A message from the Faculty of Medicine of the International University of the Republic of Colombia was read by Prof. Dr. Dario Cadena, of Bogota, Colombia.

HONORARY FELLOWS

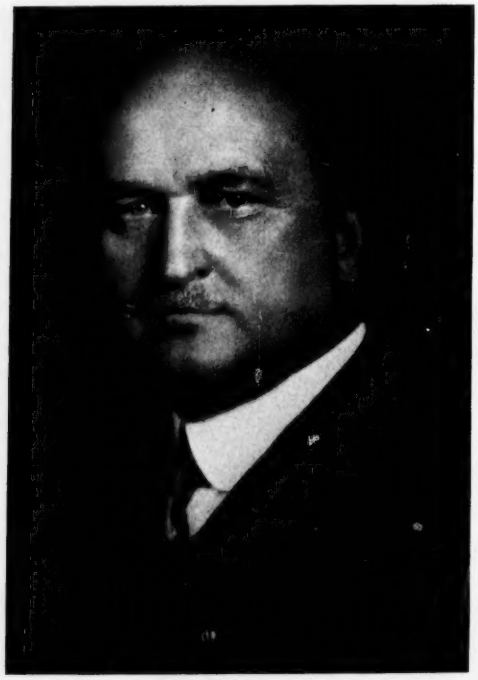
A list of surgeons given Honorary Fellowship, duly recommended and approved, was read by Dr. William Seaman Bainbridge and accepted by President Crotti.

ORATION ON SURGERY. DR. ANDRÉ CROTTI, Columbus, Ohio.

This address will appear in a later issue.

ADJOURNMENT

DR. FRED H. ALBEE, of New York City, President-Elect, was introduced and acknowledged the honor with brief remarks, after which the Convocation came to an end.



FRED H. ALBEE, M.D., Sc.D., LL.D., F.A.C.S., F.I.C.S., International President-Elect of the International College of Surgeons.

SCIENTIFIC PAPERS

Tuesday, May 23, 9:45 a. m.

ANDRÉ CROTTI, *International President, Presiding*

PLANNING THE SURGICAL DEPARTMENT OF THE MODERN HOSPITAL (illustrated with lantern slides). DR. WILLIAM H. WALSH, Chicago.

This paper appears elsewhere in this issue.

THE RESULT OF ANTERIOR PITUITARY TRANSPLANTS ON THE ANTERIOR CHAMBER OF THE EYE (with microscopic and slide demonstrations). DR. RAFAEL E. LÓPEZ, Caracas, Venezuela.

This paper will appear in a later issue.

FRED H. ALBEE, M.D., *International President-Elect, in the Chair*

SURGICAL RESTORATION IN WAR INJURIES OF THE MANDIBLE, WITH SPECIAL REFERENCE TO THE FIXATION OF EDENTULOUS FRAGMENTS. DR. EMIL MAJOR, Budapest, Hungary.

This paper will appear in a later issue.

BONE TRANSPLANTATION IN DISEASES OF THE OSSEOUS SYSTEM (illustrated with lantern slides). DR. A. FAHRI AREL, Istanbul, Turkey.

This address will appear in a later issue.

COMPLICATIONS OF OPERATION FOR ACUTE APPENDICITIS. DR. JULES VONCKEN, Colonel, Service de Santé, Belgian Army, Liége, Belgium.

This paper will appear in a later issue.

Tuesday, May 23, 2:20 p. m.

ANDRÉ CROTTI, M.D., *International President, in the Chair*

PIONEER SURGERY IN SYRIA. DR. A. A. ALTOUNYAN, Aleppo, Syria.

This paper appears elsewhere in this issue.

SARCOMA VERSUS STROMATOUS ENDOMETRIOSIS OF THE UTERUS (illustrated with lantern slides). DR. J. R. GOODALL, Montreal, Canada.

This paper appears elsewhere in this issue.

SURGERY OF CAROTID BODY TUMORS (illustrated with lantern slides). DR. R. W. McNEALY, Chicago.

This paper will appear in a later issue.

OSTEOCHONDROBLASTOMA METACARPAL PRIMITIVE. DR. MANUEL A. MANZANILLA, Mexico City, Mexico.

This paper will appear in a later issue.

WHITE BILE. DR. FRANCISCO CASTILLO NÁJERA, Ambassador from Mexico.

This paper appears elsewhere in this issue.

BANQUET

Tuesday, May 23, 10:30 p. m.

ANDRÉ CROTTI, M.D., *International President, Presiding*

WILLIAM SEAMAN BAINBRIDGE, M.D., *Toastmaster*

Invocation was offered by the REVEREND FATHER JOSEPH ROONEY, Headmaster, St. Francis Xavier's College, New York City.

Banquet of the International College of Surgeons during the International Scientific Assembly, Hotel Roosevelt, New York City, May 23, 1939.

WILLIAM SEAMAN BAINBRIDGE, A.M., Sc.D., M.D., F.I.C.S., Captain, M.C.-F., U. S. Navy Reserve, International Treasurer of the International College of Surgeons.

PRESIDENTIAL ADDRESS BY DR. ANDRÉ CROTTI

TO all of you who have come from far and near let me extend a hearty welcome. This occasion marks a historical date in the annals of the International College of Surgeons, because this is the *First International Assembly.* It is true that the United States Chapter of the International College of Surgeons has held several meetings in the past two years. It is also true that the International College of Surgeons held an emergency executive meeting last October in Philadelphia to adopt a new Constitution and new By-Laws to replace the old ones which were regarded as defective; this, however, is the true first International Assembly. That the present scientific meeting of the College and this gathering of tonight have a truly international character, no one can question. One has only to look at the scientific program of the past two days, and one needs only to cast a superficial glance at the distinguished people, here assembled, to become convinced of this very fact. It is especially to you foreign members and foreign guests that the College is grateful, because by your active participation in the scientific activities of the College in the past two days, and also by your presence here tonight, you have imparted to this Assembly a dignity and a distinction that nothing else could have done. I assure you that your active, as well as your moral, support will spur the College toward better and greater things. But, uppermost, the College construes your participation in the scientific program and your presence here tonight as an unequivocal testimonial of your approval of the College and its aims.

Founded in Geneva, in 1935, the College is still in its infancy. Judging, however, by its accomplishments of the past few years, and by the glowing success of the present International Assembly, one will have to admit that the Col-

lege, though still an infant, is a very lusty one, indeed. No sign of rickets, no sign of hypothyroidism in him. It bears all the characteristics of a vigorous child, which augurs well for its future.

The reason for the amazing and rapid success of the College lies in the fact that the College fulfils a real mission. Let me explain.

The College feels that any man who has attained great prominence in the field of Surgery or of Medicine owes his success to himself first, and to the medical profession second.

To himself first: Indeed, no one can attain high proficiency in his calling if he himself does not go through the necessary sacrifices of hard work, self-denials, etc., which will gradually and slowly lead him to the mastery of his art.

But when this is done, it is the medical profession which pulls out of today's obscurity the celebrity of tomorrow. It is the medical profession which tells the public to have confidence in the skill of this still unknown man. It is the medical profession which supports him, defends him, believes in him, and it is through the medical profession that this very man attains the heights of prominence.

In consequence, I say that man owes much to his colleagues. He has contracted a real debt.

Now, what can he do to show his gratitude, to discharge a part of his indebtedness? It is very simple. He must do for the medical profession what the medical profession has done for him. He cannot remain selfishly aloof at the summit of his glory and ignore that there are thousands of young surgeons who are passing through the arduous and thorny path, which he once followed. That maturity of judgment, that large experience obtained by bitter prices paid by others, must not be allowed to die prematurely; these must be placed at the service of the younger generation of surgeons before their owner passes on. Only in so doing will the great leader fill his full mission, which is to heal the sick and to impart knowledge to the younger surgeons.

With this in mind, the College regards itself as a school, and not merely as a Pantheon where the eligibles come to peacefully rest, crossing their arms on their chests, and from the height of their grandeur looking down with condescension upon the passing flow of surgical humanity and saying to each other: *Non sunt digni intrare in nostro docto corpore* ("They are unworthy to belong to our learned body").

The College thinks in terms of education and not in terms of self-adulation. No one is too great to serve. The College gladly and justly recognizes what other medical and surgical organizations, especially the American Medical Association and the American College of Surgeons, have done in that field of education. The College, however, feels that much remains to be done, and feels that it can do its part toward the betterment of surgical standards, not only in this country, but also all over the world, since the College is international. The International College of Surgeons bears malice to no one; it recognizes that academic freedom and intellectual liberty are the rightful possession of every one. Any one who for selfish reasons attempts to throttle that academic freedom and that liberty of thought and action resorts to methods which smack too much of trade-union tactics, and which the College regards as unworthy of any self-respecting and high-minded member of the profession. The College estimates that the intrinsic value of a man is the only thing that counts. It feels that the value of a man, derived through extraneous channels such as political affiliations, cliquism, etc., is only an extrinsic value, and consequently irrevelant to the College.

Surgery is the grandest and noblest profession in the world. It deals constantly with life, with death, and with the health of the patients. It is full of emotions, at times sweet, at other times tragic. It is thrilling by the diversity and by the profoundness of the problems encountered; it is fascinating because it taxes to the limit the skill and technical ability of its followers; it is a mission of the highest type, since it requires the conscience of an honest man and the understanding soul of a Sister of Charity. Indeed, an unquestioned moral solidity is the fundamental requirement of a truly high class surgeon. Do not think that the moral responsibility of the surgeon is involved solely during the surgical act; no, it begins as soon as he decides that an operation must be performed.

It is then, when face to face with his own conscience, he decides to intervene that the fate of the patient is being decided. Now, if the conscience of the surgeon has been dulled, if mercenary or selfish reasons are the guiding motives in that decision, and if the operation is undertaken in the face of inadequate competency, one can easily foresee that an unnecessary, tragic ending may well be the result of such a decision.

Furthermore, no one can always foretell what the difficulties encountered in a given operation are going to be. They may be so unexpected, so sudden, so complicated that they may tax all the resources of the surgeon. Since superiority is the capacity of rising to an emergency, only that patient will have the best chances of surviving who is in the hands of a superior surgeon. And what constitutes a superior surgeon? The superior surgeon is the one who has conscience, knowledge, skill and experience. If a patient died at the hands of a dishonest and inadequately trained surgeon, manslaughter, perhaps murder, has been committed.

With this in view, it will become perfectly clear to every one why the International Col-

lege of Surgeons desires to have among its membership not alone the surgeons of great prominence but also those surgeons of lesser caliber and, uppermost, those surgeons who are just coming into the field. It is in the latter men that the College is most keenly interested, not only because they represent the future of surgery, but because they need guidance and encouragement. They are still in sore need of opportunities to learn. The College feels that it can help them, and the time to help them is during these few years when they are out in the world alone, trying to make a place for themselves.

The dangerous period for a young surgeon is the first ten years of his practice. These first few years are full of difficulties, of discouragements, of temptations to take the short cut by throwing overboard the dictates of the code of morals and of ethics. The soul of a young surgeon is like the soul of an adolescent. Let me quote the verses of a great French poet, Alfred de Musset:

Le coeur d'un homme vierge est un vase profond;
Si la première eau qu'on y verse est impure
L'océan passerait sans laver la souillure
Car l'abyme est immense et la tache est au fond.

("The heart of a virgin man is like a deep vase;
If the first water poured into it is impure
The ocean could pass through it without cleansing it,
Because the abyss is deep,
And the stain remains at the bottom.")

This is only too true of the young surgeon. In fact, it is so true that one can easily foretell what a young surgeon is going to be when he will have reached his maturity. If, during the first difficult years, the young surgeon remains morally and ethically clean, and seeks success through industrious and legitimate means, his future is quite safe. This young surgeon will be some day a leader.

"By labour, vertue may be gained,
By vertue, glorie is attained."
—*George Wither, 1635.*

In consequence, the College, through the formation of *surgical guilds* throughout the country, seeks to impart knowledge to its young associates. I do not need to go into much detail concerning these surgical guilds. Suffice it to say that they represent intermittent postgraduate courses at which the young surgeons will be not only listeners but also performers, critically watched by their elders.

It is here that the leaders finally find the opportunity to pay their indebtedness to the profession which has made them great. Furthermore, their personal contact with the young surgeons will do much to stimulate the healthy ambition to progress, and will encourage them to remain steadfast in the observance of the ethics of their profession, and thereby retain not only their own self-respect but also the respect and confidence of the medical profession and of the public.

Also, the International College of Surgeons desires to establish closer relationship among the surgeons of the world. This is to be obtained through the publication of the JOURNAL OF THE INTERNATIONAL COLLEGE OF SURGEONS, and through scientific gatherings such as this one. There is nothing like personal contact to clarify opinions and to smooth out difficulties; one can come much nearer to getting the real estimate of a man by coming face to face with him than by reading his writings. Many lasting and solid friendships have thus been established, while, on the other hand, many exaggerated values have flattened out like a soap bubble. Molière, the great French fabulist, had already sensed that when he wrote:

De loin c'est quelque chose
Et de près ça n'est rien.

("From afar, it looks big,
But from near it is nothing.")

The International College of Surgeons merely wishes to add its bit to what other organizations are doing for the advancement of surgery, and it wishes to do it in its own way. There is so much to be done that the little the College will accomplish will, by no means, finish the task. There will remain plenty for others to do.

We are all seeking the same object, namely, the progress of this great profession of ours. That is the sole and ultimate goal which we are all striving for, no matter if we belong to the International College of Surgeons or if we belong to other affiliations.

This being the case, the sooner we all join hands, the sooner the goal will be attained.

Each one of us, individually and collectively, loves this great profession of ours, because it is beautiful, because it is great and noble. We do not love it halfway; that is impossible; surgery ensnares its followers wholly. We love our great profession as the sailor loves his great open sea, knowing full well all of its beauty and all its dangers. We love it as the soldier loves the battle with all its terrors and with all its triumphs. The surgeon is the soldier battling Death. In this struggle, he is often stronger than Death, but also he knows only too well that the pangs of defeat are often waiting around the corner. The life of a surgeon is full of beauty, of enthusiasm, of triumphs, of catastrophies, of disappointments. Great are the responsibilities of the surgeon.

In consequence, any one who will strive for the advancement of surgery undertakes a wholesome and humanitarian task.

Ladies and Gentlemen, the International College of Surgeons is committed to such a task.

ADDRESS BY DR. MAX THOREK

THE shibboleth of our society is *internationality* and *interfraternity*. From all nations our group is selected. We stand as crusaders for all mankind and for all men. For

MAX THOREK, M.D., F.I.C.S., F.I.C.A., Acting International Secretary of the International College of Surgeons.

ages, suffering humanity has appealed for relief. The first plea goes to God and to His ministers on earth, and the second rises to His mortal dispensers of mercy, members of the medical and surgical professions. After all, it is *mercy*, that makes kin the *visible* and the *invisible* worlds. Mercy is the Infinite's great common denominator of the universe. The great mortal common denominator is that most marvelous of all machines, the human body. The mechanicians who keep it functioning and in repair are we, ourselves, the sons of Aesculapius. Ours is the human key to that most precious, living possession as cited in the words of the Apostle Paul: "Skin for skin: All that a man hath will he give for his life."

Now, because of this power vested so sacredly in our venerated profession, scientists must work as one, without barrier, as aptly exemplified in the aphorism of Pasteur we have adopted: *La science n'a pas de patrie parce que le savoir est le patrimoine de l'humanité, le flambeau qui éclaire le monde.* The words and thought of the great Pasteur have been significantly augmented by our excellent International President, Dr. Crotti. There, in substance, is outlined our *credo.*

We must share experiences, discoveries and all research for the sake of science and mankind. For science should be shared mutually and freely with her acolytes as the Infinite Power possesses in common with the finite world the air, the sun and the other elemental attributes of the Universe. If we fail in this mutuality, then we fail as scientists.

Suffering is the common lot. Equally common should be the palliations or panacea, as one by one science unfolds the ways and means to palliation or cure.

Man is not made to live alone, nor races created to dwell in proud, narrow and selfish splendor. Barriers hindering surgical progress must be removed from all scientific endeavors before the world can fulfil its destined place in the universe. Achievement is *of the world, in its entirety.* And so achievement can recognize no limits. It requires organizations such as our International College of Surgeons to blaze the trail for the humanities, working together for the common good; and the good of all humanity means the exchanging of ideas and methods, and ways and means from such groups as ours—and establishes, too, a nucleus from which will sprout and flourish the acme of mortal benefits.

Every surgeon worthy of the name counts as his greatest recompense not his monetary reward —though even a surgeon must live—but the knowledge that he has alleviated suffering, rebuilt an injured body, and kindled anew in the heart of another human being the fires of hope and courage, and often happiness.

All nature is cooperative and correlative. In the destiny of the whole, even the most destructive of nature's forces play a great part; and science is, at once, nature's handmaid and *her master!* As scientists, we are bound together as one body. We must recognize that fact. We are one in science as the body is one in the flesh. Do we ply our art and science on Himalayan mountain tops? On the shores of the Yangtse-Kiang? At the foot of Fuji-Yama? In the shadow of the Seven Hills and the echo of the bells of Rome? Or where the chimes of Big Ben cut through the fogs of London? In the glow of the midnight suns of Norway, Sweden, Greenland, Alaska or the chill Arctic and Antarctic regions? Or the cinders of the smoking shambles, plains and mountains that were once haughty Spain? In the slums of Paris? Or on Unter den Linden of Berlin? By the griefs of

Palestine? The renaissance of Turkey? The classic ghosts of Greece? Of the Andes? In the huts or castles of Mexico? Or the isolation of scattered islands? The shadow of Egypt's past? Or the aroma of Brazilian coffee fields or Argentinian natural beauties? No matter where we work, *ours is the common bond.* Because of this common bondage we sons of Aesculapius must strengthen our bonds of relationship, just as the heart keeps the blood circulating in the body from head to foot. We must take our idea of cooperation from that human body that we serve in the name of science.

Eventually, our society will stand as a unit of scientific perfection and power because of its unselfish, self-sacrificing, fraternal and mutual labors toward the glory of human endeavor for humanity's sake.

When we have thus constituted our society and ourselves into a mighty machine of mercy and learning, freely disbursed, from it may eventuate such a leverage of health and hope and welfare that all the peoples of the world will lay their laurels at the pedestals of our endeavors. Like the waters we drink, the air we breathe and the earth we tread, so are the science and the art of the surgeon a real and a sacred gift from the Infinite. Since this is so, this great gift must be used, in so nearly as finite men can humbly imitate the Infinite, in a style and manner patterned after the generosity and the patience with which the universe is surrounded and from which it was built.

Gentlemen, let me quote from "Ye Weary Wayfarer":

> "Life is mostly froth and bubble,
> Two things stand like stone:—
> Kindness in another's trouble,
> Courage in our own!"

ADDRESS BY COL. DR. JULES VONCKEN

Science has no country; neither has charity. Science permeates the world and wishes it to be beautiful, great and just. It is for that country that we meet in these International Congresses with the clear vision of worthily representing our nations and our scientific and humanitarian aspirations.

We are surgeons, and we are conscious of the altruistic mission of our profession. Our ideal, also that of all military surgeons who have lived through anguishing hours during the World War and who have witnessed its hardships and its tragedies, is to exert the influence of our calling in humanizing warfare.

We leave America with the hope that our appeal for peace and for charity will be heard and that the world's greatest republic will help us to fortify our efforts toward peace. Those efforts for peace are the goal of all the small nations of the world.

ADDRESS BY DR. FRANCISCO CASTILLO NÁJERA

I am embarrassed to speak before this élite group, although I know that the men of science are very kind people. The words I say do not belong to me. They belong to men to whom I have been talking. I have been with these outstanding men of science, coming from all over the country.

The necessity of beautifying mankind is urgent. It is felt by men everywhere, but it is particularly precious because it is best understood by the medical men. They have ideas and ideals, and to better express them and put them into practice they have formed not only national societies but also international societies.

We are living in terrible times, and some will say that we are facing the destruction of civilization, and perhaps of mankind. But that is not possible. It might have been possible during the Middle Ages, when the world was not completely unified, geographically, and when America was not discovered.

Some will say that it is the law of nature to fight; but that is not true. If we examine more carefully the state of mankind, proceeding from the lower animals to the highest—that is to say, the most enlightened men—we shall find it is mostly man who fights against man. There have been fights, yes, between animals, but never has a group of animals been seen going against another group of animals. The instinct of self-preservation is stronger than any tendency to destruction.

Nowadays, all the important activities of the individual family are connected with some medical achievement. No one can deny that. And I think that the medical profession in this special age we are going through has become a factor in the progress of mankind.

This manifestation of the International College of Surgeons is proof that humanity will become unified, and it is going to be realized in the very near future. It is impossible to have destruction of mankind in mind. And if medicine is a scientific art, the artistic part belongs to the surgeon. He is a sculptor; he is like a magician; he has his special material to work on, human flesh.

The military surgeon is the only soldier who can work in favor of peace. The well known phrase of Pasteur, "Science has no fatherland," is very true. Pain has no fatherland, either. In misery, in sickness and in pain, men are only human beings. It must be our aim to fulfil the duty within the limits of the special capacity of each one of us.

DR. EDWARD FRANKEL, JR., Executive Secretary, named the members of the committee of the International Assembly and paid tribute to the fine activities of the Ladies' Auxiliary and the future of the College.

DR. EDWARD FRANKEL, JR., New York: If you had sat on the platform at the Convocation last evening and looked over the distinguished assemblage of men comprising our class of about 100 candidates, it would have been a source of satisfaction to you to see such earnestness, absorbing interest and informal dignity. It was a wonderful and inspiring ceremony. The International College of Surgeons is still, indeed, in its infancy, but it is growing, and growing rapidly; and it is here to stay.

Toastmaster DR. WILLIAM SEAMAN BAINBRIDGE introduced COLONEL HAROLD DUNBAR CORBUSIER, of Plainfield, N. J., Vice President of the International Congress of Military Medicine and Pharmacy, to succeed MAJOR GENERAL C. R. REYNOLDS. He then presented DR. EMIN ERKUL, of Istanbul, Turkey.

DR. EMIN ERKUL, Istanbul, Turkey: After having participated in the Tenth International Congress of Military Medicine and Pharmacy, I have been honored in being able to take part in the International Assembly of the International College of Surgeons. I should like to add my earnest desire for the increased activity of the College. In expressing again my thanks, I wish happiness for America and the Americans!

HONORS

Toastmaster DR. WILLIAM SEAMAN BAINBRIDGE then presented, in the name of the Surgeon General of Poland, DR. STANISLAUS ROUPPERT, the honorary degree of graduate of the University of Poland and Honorary Professorship in the Sanitary School of Poland to the following: DR. ROSS T. MCINTIRE, Rear Admiral, Medical Corps, United States Navy, and DR. ANDRÉ CROTTI, International President of the International College of Surgeons. DR. FRANCISCO CASTILLO NÁJERA, Ambassador from Mexico, had already been presented with this distinction, and MAJOR GENERAL C. R. REYNOLDS had received it some years ago.

EXECUTIVE SESSION OF UNITED STATES CHAPTER
In Conjunction With
EXECUTIVE SESSION OF INTERNATIONAL COUNCIL

Wednesday, May 24, 5:00 p. m.

FREDERICK M. DOUGLASS, M.D., *President, United States Chapter, Presiding*

Discussion of the guilds and their activities ensued. Participants were DR. CHARLES H. ARNOLD, of Lincoln, Neb., DR. JOSEPH WILLIAM WHITE, of Scranton, Pa., and others.

ANDRÉ CROTTI, *International President, in the Chair*

VOTED: WHEREAS, The International Assembly held in Philadelphia, Oct. 14, 1938, ratified and adopted a revised Constitution and By-Laws, and

WHEREAS, The study of this Constitution and By-Laws has revealed the desirability of having it registered in Geneva as a part of the registered Constitution and By-Laws,

Be It Resolved, That the International Assembly convened in the City of New York on May 24, 1939, hereby empower the International Executive Council to have the adopted Constitution and By-Laws represented as representing an amendment in extension and continuation of the registered Constitution and By-Laws, and

Be It Further Resolved, That the International Executive Council be hereby empowered to appoint a business agent in the City of Geneva, Switzerland, said business agent to be or not to be a member of the medical profession, at the discretion of the Council, for the purpose of representing the Council according to the provision of law.

VOTED: That the Assembly in session at present empower the International Executive Council to decide, at its own discretion, the place of the international meeting two years hence, also giving each member an opportunity and a right to suggest any place of meeting two years hence.

VOTED: That the present Assembly go on record as thanking and congratulating the committees which have had charge and all who have taken part.

FREDERICK M. DOUGLASS, *President, United States Chapter, Presiding*

VOTED: That reading of the minutes of the meeting in Philadelphia be dispensed with on account of the lateness of the hour.

VOTED: That DR. BENJAMIN I. GOLDEN, of Elkins, W. Va., be elected Treasurer of the United States Chapter to fill the unexpired term left vacant due to the resignation of DR. OSCAR B. NUGENT, of Chicago.

VOTED: That the next meeting be held in Venice, Fla., on Feb. 12 and 13, 1940, and that it be known as the National Assembly of the United States Chapter of the International College of Surgeons.

VOTED: That the definite date for the Annual Meeting of the United States Chapter be fixed by the Executive Council.

ANNOUNCED: By DR. BENJAMIN I. GOLDEN, that if any of those present were Reserve Officers they could get active duty credit for attending the session, and that he had slips to distribute to those entitled to same.

VOTED: That the Executive Council be authorized to offer such prizes for scientific essays, comprising original work, as they see fit, and for the best scientific exhibit at the next Assembly.

VOTED: That a letter of appreciation be directed to DR. J. DAVID BEATTY, of Los Angeles, for his fine work in popularizing the JOURNAL.

VOTED: That a suitable emblem be designed and provided, to be worn by Members and Associate Members.

VOTED: That appreciation be extended to DR. EDWARD FRANKEL, JR., and DR. EARL B. CRAIG for the excellent caps and gown they designed and registered in Washington as the distinctive insignia of the International College of Surgeons.

ADJOURNMENT (*7:00 p. m.*)

SIXTH BIENNIAL CONGRESS OF THE INTERNATIONAL HOSPITAL ASSOCIATION

The **Sixth Biennial Congress of the International Hospital Association** will be held in Toronto, Canada, September 19-23, with headquarters at the Royal York Hotel, under the presidency of DR. MALCOLM T. MACEACHERN, of Chicago, and the patronage of LORD TWEEDSMUIR, Governor-General of Canada.

The following committees will be in charge:

Toronto Committee on Local Arrangements: Executive Committee: DR. FRED W. ROUTLEY, Past President, Canadian Hospital Council, *Honorary Chairman;* DR. W. S. CALDWELL, Director, Canadian Red Cross Society, Ontario Division, *Chairman;* MR. CARL I. FLATH, Superintendent, Wellesley Hospital, *Secretary-Treasurer;* DR. G. HARVEY AGNEW, President, American Hospital Association, *Ex Officio.*

Subcommittee Chairmen: DR. FRED W. ROUTLEY, Canadian Red Cross Society, Ontario Division, *banquet;* MISS PEARL MORRISON, Hospital for Incurables, *educational and gadgets exhibits;* MR. A. D. KELLY, Ontario Medical Association, *entertainment;* MR. ARTHUR HEENEY, architect, *exhibits and meeting halls;* MR. C. J. DECKER, Toronto General Hospital, *golf;* DR. W. J. DOBBIE, Toronto Hospital for Consumptives, *hospital tours;* DR. C. B. FARRAR, Toronto Psychiatric Hospital, *information and registration;* DR. FRED A. LOGAN, Toronto General Hospital, *interpreters and translations.*

Committee of the American Hospital Association on International Hospital Relations. Chairman: MR. HOWARD E. BISHOP, Sayre, Pa., Administrator, Robert Packer Hospital. *Members:* DR. G. HARVEY AGNEW, Toronto, Secretary, Department of Hospital Service, Canadian Medical Association, President, American Hospital Association; DR. ROBIN C. BUERKI, Chicago, Director of Study, Commission on Graduate Medical Education, President, American College of Hospital Administrators; DR. BERT W. CALDWELL, Chicago, Executive Secretary, American Hospital Association; DR. MALCOLM T. MACEACHERN, Chicago, Associate Director, American College of Surgeons, President, International Hospital Association.

The officers of the International Hospital Association are as follows:

Honorary Presidents: DR. W. ALTER, Buchschlag, Hessen, Germany, Geheimer Regierungs-und-Medizinalrat; DR. E. H. L. CORWIN, New York, Secretary, Academy of Medicine; DR. G. VON DESCHWANDEN, Lucerne, Switzerland; SIR HAROLD PINK, J.P., London, England, Chairman of Council, British Hospitals Association; DR. RENÉ SAND, Brussels, Belgium, Secretary-General, Ministry of Health.

President: DR. MALCOLM T. MACEACHERN, Chicago, Associate Director, American College of Surgeons.

President-Elect: DR. RALF ZEITLER, Berlin, Vizepräsident des Deutschen Gemeindetags.

Honorary Secretary: DR. W. ALTER, Buchschlag, Hessen, Germany, Geheimer Regierungs-und-Medizinalrat.

Honorary Treasurer: MR. EDMUND HEISCH, Bexhill-on-Sea, England, chartered accountant.

Medical Society of New Jersey

The **Medical Society of New Jersey** held its one hundred and seventy-third Annual Meeting in Atlantic City, June 6-8. Among the speakers were DR. I. S. RAVDIN, of the University of Pennsylvania, and DR. ALFRED STRAUSS, of Michael Reese Hospital, Chicago. DR. GEORGE P. MULLER, of Jefferson Medical College, Philadelphia, addressed the **Section on Surgery** on "Acute Appendicitis."

The following program was given at the meeting of the **Section on Gastroenterology:**

The Constitutionally Inadequate Patient. DR. WALTER C. ALVAREZ, the Mayo Clinic.

Experiences in Diagnosis with the Peritoneoscope: Indications for Its Use. DR. C. ABBOTT BELING, Newark, N. J.

The Treatment of Intestinal Obstruction with the Double-Barreled Intestinal Tube. DR. W. OSLER ABBOTT, the University of Pennsylvania.

Functional Diseases of the Colon. DR. SIGURD JOHNSEN, Passaic, N. J.

Vascular Diseases of the Digestive Tract. DR. STUART Z. HAWKES, Newark, N. J.

The following officers were elected for the **Section on Gastroenterology:** DR. HYMAN I. GOLDSTEIN, of Camden, N. J., Chairman, and DR. CARROLL D. SMITH, of Paterson, Secretary. DR. MANFRED KRAEMER, of Newark, is the retiring Chairman and DR. GOLDSTEIN the retiring Secretary.

The Medical Society of New Jersey, founded in 1766, is the oldest medical society in this country.

The Fourth Congress of the International Society of Orthopedic Surgery and Traumatology will be held in Berlin, Sept. 4 to 8, 1939, under the presidency of **Prof. Georg Hohmann,** of Frankfurt-am-Main. Following the opening of the Congress by **Prof. Hohmann, Prof. Louis Ombrédanne,** of Paris, will give an address, and the General Secretary, **Dr. Delchef,** of Brussels, will present a report.

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The **Third International Congress on Cancer,** which will meet in Atlantic City, N. J., September 11 to 16, is to be held under the auspices of the **International Union Against Cancer.**

The **Third French Congress on Gynecology** met at Lille, May 27 to 30. The chief topic for discussion was "Parthenology," with **Dr. M. F. Jayle,** of Paris, leading. The congress was held at the same time as the Exposition of Social Progress and was enlivened by a number of fêtes, receptions, and excursions to nearby points of interest.

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The twenty-fourth annual meeting of the **American Association of Industrial Physicians and Surgeons,** in conjunction with the **American Conference on Occupational Diseases and Industrial Hygiene,** was held at the Hotel Statler, Cleveland, June 5 to 8, inclusive.

THE NATIONAL ASSEMBLY OF THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS WILL BE HELD FEBRUARY 12 AND 13, 1940, AT VENICE, FLORIDA, UNDER THE DIRECTION OF INTERNATIONAL PRESIDENT-ELECT DR. FRED H. ALBEE AND THE PRESIDENCY OF DR. FREDERICK M. DOUGLASS.

News and Personals

MEXICAN CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS

As stated elsewhere in this issue, a meeting of a number of prominent Mexican surgeons was held in Mexico City, and a chapter, to be known as the **Mexican Chapter of the International College of Surgeons** was formed. Its members represent outstanding surgeons garnered from the members of the National Academy of Medicine and from the Mexican Academy of Surgery.

The following officers were elected: Dr. Gonzalo Castañeda, President; Dr. Luis Rivero Borrell, Vice President; Dr. Francisco Fonseca García, Secretary; Dr. Miguel López Esnaurrízar, Treasurer.

The national regents elected were: Drs. Manuel A. Manzanilla, Gonzalo Castañeda and Miguel López Esnaurrízar.

The following specialty regents were elected:

Dr. Darío Fernández Fierro, general surgery; Dr. Luis Rivero Borrell, genito-urinary surgery; Dr. Donato G. Alarcón, thoracic surgery; Dr. Juan Farill, orthopedic surgery; Dr. Abrahim Ayala González, gastro-enterology; Dr. Mariano Vázquez, neurosurgery; Dr. Antonio Torres Estrada, ophthalmology; Dr. Federico J. Molas Oliveras, otorhinolaryngology; Dr. Luis Carrillo Azcárate, industrial surgery; Dr. Benjamín Bandera, anesthetic surgery; Dr. Manuel Martínez Suárez, oral surgery.

A charter was obtained and by-laws were adopted, which are in harmony with the charter issued to the parent body in Geneva in 1935.

Dr. Chevalier Lawrence Jackson, clinical professor of broncho-esophagology of Temple University, Philadelphia, conducted a course in broncho-esophagology at the Hôpital Necker-Enfants-Malades, Paris, from July 3 to 13, held under the auspices of the Association d'enseignement des hôpitaux de Paris. Assisting were Drs. Fernand Eeman, of Ghent, da Costa Quinta, of Lisbon, J. Vialle, of Nice, and A. Soulas, of Paris, formerly assistants of Dr. Jackson in Philadelphia. Lectures and demonstrations were given in French and English, with explanations in Spanish, Portuguese and German.

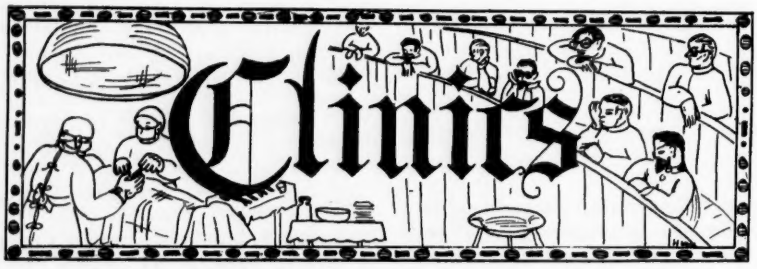
The French League for the Study of Cancer has awarded the Amerongen Prize of 100,000 francs to **Prof. A. H. Roffo,** Director of the Institute of Experimental Medicine for the Study and Treatment of Cancer at the University of Buenos Aires, for his memoir "Development of Malignant Tumors, Carcinoma and Sarcoma, Through Food Ingestion." The Amerongen Prize was destined by its founder as a recompense for work affirming with certainty that canned or chemically treated foods have or have not an influence on the genesis of cancer.

The French Government has bestowed on **Prof. Jules Bordet** the Grand Cross of the Legion of Honor. **Professor Bordet** is Director of the Pasteur Institute of Brussels, and was awarded the Nobel Prize in medicine. His pupils, colleagues and French friends have arranged to have a medal struck with his portrait as a testimonial to their admiration for his scientific work, his splendid accomplishments in teaching and his loyal friendship for France.

Competition for the **Umberto I Prize** was opened by the Rizzoli Orthopedic Institute of Bologna, Italy, January 1, to close December 31. This prize is offered for the best "work or invention in orthopedics." Foreign and Italian scientists are invited to compete. Application for information should be made to the president of the Rizzoli Institute, Bologna.

The assets of **American Foundations** now amount to more than $1,200,000,000, according to a report recently published by the Raymond Rich Associates of New York. Of 243 foundations listed, 121 reported capital assets of $945,443,637 at the end of 1937, the latest year for which figures were available. For the other 122 that did not make public the extent of their assets, available information indicates that they aggregate about $250,000,000. Among the largest were: Rockefeller Foundation, $184,435,516; Carnegie Corporation of New York, $163,841,376; General Education Board, $54,607,431; Commonwealth Fund, $51,830,504; Kresge Foundation, $50,358,564; W. K. Kellogg Foundation, $46,609,613; Carnegie Institution of Washington, $36,506,669, and the Carnegie Foundation for the Advancement of Teaching, $29,031,848. Certain foundations reported decreasing assets, most of them being those that have been appropriating from capital for project grants as a matter of policy. —*J. A. M. A.*

Mrs. Marguerite Kettle, M.R.C.S., assistant editor of the *Lancet,* died in London on May 4. She was born in a suburb of London in 1887, was educated in England and France, and went to South Africa in 1910, where she passed the matriculation examination of London University by a correspondence course. She returned to England in 1913 and entered the London School of Medicine for Women, then transferred to St. Mary's Hospital, London. In 1918 she married Prof. E. H. Kettle, F.R.S. Later she joined the staff of the *Lancet,* for which she wrote a series of articles on "Modern Technique in Treatment," later published in four volumes. She wrote the report of the *Lancet* commission of nursing, and was appointed a representative on the General Nursing Council. A professional medical writer of realistic approach and idealistic views, **Mrs. Kettle** has set a high standard in medical literature.



WEST VIRGINIA GUILD MEETING

The West Virginia Guild of the International College of Surgeons held its first meeting in Charleston, W. Va., on June 15.

The program for the day was arranged by Dr. John E. Cannaday, State Regent, and Dr. G. E. Irwin, Chairman of the State Guild.

At 9:00 a. m. an operative clinic was held by Dr. Cannaday and staff. The operative cases were well selected and timely. Luncheon was served at the Charleston General Hospital for the members and their guests. In the afternoon a dry clinic was held by the staff of the Charleston General Hospital, and the discussion was participated in by all present. The day was a very valuable one, not only from the educational angle but also for the enthusiasm of the men present in this type of clinic.

It was unanimously approved that a State Guild meeting be held in Charleston in October, at which time a number of the younger surgeons throughout the state be invited and be given parts in the program.

——Thomas L. Harris, M.D., F.I.C.S.,
Secretary of the West Virginia Guild of the International College of Surgeons.

FOREIGN LETTERS

PARIS

(From Our Regular Correspondent)

May 5, 1939.

Ten Thymectomies

In the cases of ten patients, all adults, reported by Leriche and Young (*Mém. Acad. de chir.* 65:329 [March] 1939), in which thymectomy was performed, the thymic tissue had remained active. In three cases there had been general disturbances of growth. These have been, if not cured, at least notably benefited, by thymectomy. In two of three cases of ankylosing polyarthritis, thymectomy brought about improvement, and the same success was obtained in three cases of polyarthritis deformans. In a case of generalized scleroderma in a man aged 58, the thymus showed signs of activity. The skin was notably softened after the operation. In the cases of those patients with polyarthritis, the parathyroid was found to be absent at operation and was enclosed in a persistent thymic lobe—a condition due to embryologic disturbance of development. These results are encouraging, though still temporary. Time will tell whether they are permanent. They give interesting information as to the prolonged activity of the thymus gland.

Masculinizing Tumor of the Ovary

A girl 14 years of age became amenorrheic and obese. At 16 years of age she showed progressive masculinization, with hypertrichosis, change of voice and mental and emotional disturbance. She had a beard, which she shaved daily, a small, flat breast and a lengthened clitoris. The uterus was not palpable. Roentgenograms showed no abnormality of the sella turcica. At laparotomy a small ovarian tumor the size of an orange was removed. Five weeks after the operation the menses returned, and gradually everything became normal, including the clitoris and hypertrichosis.

The tumor showed a mixed composition. It had some foci resembling the interstitial cells of the testes. Luzuy (*Mém. Acad. de chir.* 65:26 [Jan.] 1939) classifies this tumor among the male tumors, called arrhenoblastomas by the German authors, which produce a picture analogous to that described by Luzuy and in which demasculinization constantly follows intervention. A few of these patients have been followed for a short period. There have been no recurrences, and one of the patients became pregnant. It is apparent that the male hormone secreted by the tumor puts the ovary at rest, suppresses the sources of folliculin, interrupts the genital cycle and acts on the secondary sexual characters. The etiology is as yet hypothetic.

Professor Laignel-Lavastine Honored

On the occasion of the recent election to the Academy of Medicine of Professor Laignel-Lavastine, his pupils and friends presented him with a gold medal. It is a pleasure to see the brilliant career of this teacher thus rewarded. His scientific activities, his culture and his high-mindedness are matched by his courtesy and kindness.

Asepsis of Air of Operating Rooms: The Closed Mask

Surgeons and their assistants automatically impair the asepsis of operating rooms, according to Hamant and Grimault (*Mém. Acad. de chir.* 65:239 [Feb.] 1939). The microbes which they scatter in the air may be numerous and noxious and find a culture medium in the aerial solutions. The indispensable ventilation of the operating room leads to the same result. There are no perfect masks either for the surgeons or for ventilation. Fredet has judged it necessary to isolate the surgeon and his assistants, making them breathe through a special mask which consists of a bag covering the greater part of the face and head. A rubber tube at the level of the forhead furnishes a supply of fresh air under pressure. Another tube serves for removal of the suspired air. The patient is furnished with a similar mask, in which he receives the anesthetizing gases. Such a mask has application in war surgery where one must operate in the presence of noxious gases.

Periosteal Lipomas

The case of a man 60 years old who was kicked by a horse a short distance above the right knee is reported by Moulonguet, Bachy and Dobkevitch (*Rev. de chir.* 58:1 [Jan.] 1939). Fifteen days later there was an accumulation of serohemorrhagic fluid in the knee. This was punctured. The knee remained very swollen. Roentgenographic examination led to the diagnosis of osteosis or osteosarcoma. The lipoma implanted on the femur was removed. It showed adult bone with fatty medulla and thick obicula, covered with hematopoietic yellow osseous tissue.

These periosseous lipomas are uncommon. They are accompanied by great periosteal activity. They may originate in the lipoma, which secondarily adheres to the periosteum through irritation, at the level of the periosteum.

Pancreatic Secretion of Gastrectomized Persons

In the patient subjected to gastrectomy the regain in weight is tedious and uncertain. It is rapid after gastrostomy. This difference, according to Santy, Mallet-Guy, Chambon and Folliet (*Lyon chir.* 36:11 [Jan. & Feb.] 1939), is due not to a diminution of the pancreatic secretion but rather to the method of emptying the secretion. A study of 128 cases of gastrectomy showed, among other anomalies, great variability in the activity of the pancreatic juices. The physiologic mutilation which represents removal of the stomach does not seem to be the direct and exclusive factor in emaciation. One must consider diverse causes: the greater or less rapidity of passage of food in the small intestine, anachlorhydria, disturbance of circulation. It seems that the power to secrete secretin is preserved but that the pancreatic parenchyma responds irregularly to hormonal excitations. An unknown factor disturbs this stimulus. This factor may be due to the partial resection of the pneumogastric nerves.

Enervation of the Carotid Sinus

The carotid sinus intervenes normally in the cardiac rhythm and the arterial pressure. Owing to peculiar nervous receptive elements, it possesses also a reflexogenic sensibility and an endocrine function as yet ill defined. Numerous technics have been proposed for the enervation of the carotid sinus. Léger (*J. de chir.* 53:176 [Feb.] 1939) attacks the sinus at the bifurcation of the carotid artery. He describes his technic in detail. The illustrations are clear. This enervation entails no serious physiologic disturbance, because of the compensation furnished by the cardio-aortic sinus. The only contraindications are: youth, old age and arterial hypertension. In eighty cases of epilepsy, fifteen cures and twenty-one improvements were noted. In the syndrome of hyperreflexia of the carotid sinus one notes success in 85 per cent of the cases.

Ablation of the Aorticorenal Ganglion

Section of the nerves of the kidneys being innocuous, total enervation of these organs in cases in which there are diverse painful symptoms is proposed by Fontaine and Bilger (*J. de chir.* 53:582 [March] 1939). The aorticorenal ganglion constitutes the most important source of these nerves. It seems more simple to do an exeresis of this ganglion than to dissect the entire group of renal nerves, which are grouped close to the distal third of the course of the renal artery and surround this vessel. Fontaine and Bilger used this intervention in thirteen cases, once bilaterally. Ten were cases of painful hydrinephrosis, and three were cases of hypersensitive nephritis. The operative technic is described in detail. They noted no immediate after-effects and no late complications. In general, the patients urinated on the day of the operation, and diuresis rapidly returned to normal. The operation is equally efficacious in slight hydronephrosis not amenable to ordinary therapeutic measures.

Death of Antoine Béclère

The Academy of Surgery deplores the recent death of Antoine Béclère, who was one of the first to foresee the future of the x rays not only as a diagnostic aid but also as a therapeutic measure in the treatment of tumors. For thirty years he taught radiologic technic at St. Antoine. He perfected and invented many technics. Fourteen nations celebrated the anniversary of his eightieth birthday. He well deserved the title which he bore—"the father of French radiology."

Prof. Albert Fraenkel, of Heidelberg, died in December 1938, aged 74. He was noted as a clinician, introduced the intravenous use of strophanthin, and was an expert on pulmonary tuberculosis.

Dr. Henry K. Pancoast, x-ray specialist, of the University of Pennsylvania, died May 20.

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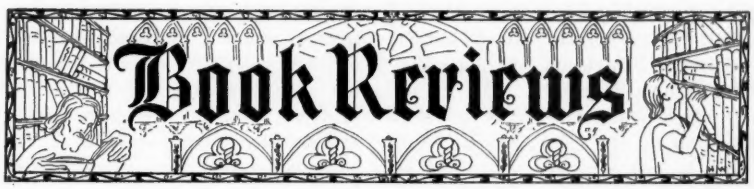
Dr. George M. Boyd, obstetrician, of Philadelphia, died May 20.



Surgical Anatomy. By C. Latimer Callander, A.B., M.D., F.A.C.S., Associate Professor of Surgery and Topographic Anatomy, University of California Medical School; Member Founder's Group of American Board of Surgery; Associate Visiting Surgeon to the San Francisco Hospital. With a foreword by Dean Lewis, M.D., Sc.D., F.A.C.S. Second edition, entirely reset. Price, $10. Pp. 858, with 819 illustrations. Philadelphia, W. B. Saunders & Company, 1939.

THE second edition of this splendid work is outstanding for its lucid style, its thoroughness and its admirable illustrations. The first edition appeared in 1933. The well deserved success which this work met with in its first edition is assured in its present form. It is classic in arrangement and refreshingly informative. Numerous new illustrations have been added to embellish and further augment the revised text. The student, general surgeon and specialist will find this work of great aid. The author, being a practicing surgeon, has garnered only that material which, in his opinion, is authoritative and which will prove of value in performing surgical operations. The work has been reset, much obsolete material has been deleted, and recent devlopments in surgical and topographic anatomy have been added. The printing, binding and illustrations are of the highest type. The work is highly recommended as a valuable addition to any medical library and has already established itself as of great value in teaching.

E. T.

Spinal Anesthesia. By Louis H. Maxson. With a foreword by W. Wayne Babcock. Price, $6.50. Pp. 409, with 70 illustrations. Philadelphia, J. B. Lippincott Company, 1938.

THIS work is a complete presentation of the principles and practice of spinal anesthesia. The text opens with a historical survey of the subject matter, followed by a thorough discussion of the anatomy of the parts concerned in subarachnoid block, to be succeeded by a discussion of the physical aspects and the various technics used by different authorities. The author points out that the conception of rapid mass movement of the spinal fluid is erroneous and that analgesia is produced by dispersion, convection and diffusion. Due credit is given to the rôle played by gravity and to the fact that the factors mentioned alone are responsible for shifting of the anesthesia from the point of injection to other points of the spinal canal. The various technics are thoroughly described and their merits and demerits discussed. The illustrations are diagrammatic. The work is divided into thirteen chapters. It has an excellent bibliography and a thorough author's index. While discussing tropacocaine, the author states that this drug has been discarded in favor of novocaine. It is nevertheless still used in many quarters, and it would perhaps be well to point out that in 20 per cent of cases tropacocaine anesthesia is followed by untoward bladder manifestations. This work deserves the careful study of every anesthetist, every general surgeon and every specialist, and it is predicted that it will be well received by the profession.

XAM.

Pediatric Surgery. By Edward C. Brenner, A.B., M.D., F.A.C.S. Price, $10. Pp, 843, with 293 illustrations. Philadelphia, Lea & Febiger, 1938.

PEDIATRIC surgery is becoming a rather important branch of general surgery. The author attempts in the present contribution to "present a volume neither encyclopedic nor compendial in type which may be of practical value to those engaged in the study of pediatric surgery." In this he has well succeeded. The work is divided into nine parts, each of which is subdivided into various subject matter. Fractures, dislocations and other orthopedic conditions are not included in the work. Diagnostic indications for operation, surgical therapy and the end-results in given operative procedures are well described. Special emphasis is given to conditions peculiar to infancy. The surgical methods described in the various surgical entities are well chosen. Many of these are augmented by pre- and postoperative treatment. A special chapter on anesthesia, by Dr. T. Drysdale Buchanan, is well presented, as is the chapter on blood transfusion by Dr. Lester J. Unger. Other

special chapters are "Congenital Cleft Lip and Palate," by Dr. H. S. Vaughan, and "Thoracic Surgery," by Dr. L. R. Davidson. Urologic conditions are discussed by Drs. C. G. Bandler and A. H. Milbert Neurologic surgery is described in a special section by Dr. C. A. Scarff. As a whole, the work is well arranged, and the illustrations are well executed. The work is warmly recommended as an adjunct to the general surgeon's library. There is a total absence of bibliographic references, which would undoubtedly enhance the value of the work. There is an excellent index of general subject matter.

O. R.

Anus, Rectum, Sigmoid Colon: Diagnosis and Treatment. By Harry E. Bacon, M.D. With an introduction by W. Wayne Babcock and a foreword by J. P. Lockhart-Mummery. Price, $8.50. Pp. 855, with 487 illustrations. Philadelphia, J. B. Lippincott Company, 1938.

PROCTOLOGY, as a specialty, has made marked strides in the last two decades. The author states that his object in writing this text has been to place within the reach of all divisions of the medical profession a comprehensive and readily intelligible exposition of "our present knowlelge of the various affections of the anus, rectum and sigmoid colon." It is obvious that a great deal of sincere effort has been put into this opus. As an example, figure 26, on page 27, immediately attracts the eye, being a very instructive diagrammatic study of the venous drainage of the rectum and anus via the superior, internal, inferior or external hemorrhoidal plexus in their relation to the portal system. Equally intriguing are the fine illustrations depicting the lymphatics of the rectum. Thus from the outset the anatomy and physiology are thoroughly described and depicted. One is promptly impressed with the thorough bibliography after each chapter, prima facie evidence that the work has not been written by proxy.

The arrangement of the chapters is excellent. History, examination, biopsy and the various clinical tests are thoroughly entered into. Anesthesia and analgesia as related to proctology are lucidly described, and this is followed by a thorough discussion of the inflammatory conditions of the parts concerned. Here, however, nothing is said about the pectinate line or pectenosis. The chapters on fissure in ano, pruritus ani and anorectal abscesses are expertly treated. The chapter on fistula is well written. Such conditions as proctitis and sigmoiditis, venereal disease of the anus and rectum and lymphopathia venereum, as well as strictures and stenosis and rectal prolapse, are treated with the same thoroughness and excellent presentation as are all the chapters comprising this fine work. The division on hemorrhoids, benign tumors and malignant growths of the lower intestine receive full consideration. The author's efforts to create a one volume encyclopedic work on proctology has been crowned with success. While no single volume can embrace all operative methods, Bacon has garnered from the literature of the world the outstanding contributions to his specialty. It is hoped that in the next edition Devine's latest work on intestinal obstruction will receive proper mention.

All in all, this reviewer highly delights in joining Lockhart-Mummery in the statement that this work should prove of value to all proctologists as a work of reference. He also subscribes to W. W. Babcock's statement that this work represents a most practical book containing a wealth of information from which the specialist may refresh his memory, while the practitioner will find that it will clarify his difficulties. To the best knowledge of this reviewer, there is no more complete single volume on proctology than the present work of Dr. Bacon.

THOREK.

Applied Anatomy: Functional and Topographical. By Robert H. Miller, M.D. Price, $6.50. Pp. 484, with 71 illustrations. Philadelphia, Lea & Febiger, 1938.

THE author of this volume attempted to correlate the knowledge gained by observation in the laboratory and apply it to the "dynamics and functions of the living body." An effort has been made to "clothe the skeleton with living parts, put it in the erect posture and to set it in motion." Topographic landmarks are pointed out, and the student is aided in developing a roentgen eye. The work is a thorough compilation of subject matter succinctly stated and authoritatively presented. It will be of much aid not only to the student but to all those whose activities demand a knowledge of anatomy. The volume is printed on fine stock and well illustrated. The B. N. A. nomenclature is used. The general practitioner and the student will find this work a welcome addition to their library.

X. A. M.

Hospital Organization and Management. By Malcolm T. MacEachern, M.D. Price, $7.50. Pp. 944, with illustrations. Chicago: Physicians Record Co., Publishers, 1935.

OCCASIONALLY, besides the "mine run" of ordinary books that come to the reviewer's desk, there is one of special and outstanding interest. Such is Dr. MacEachern's book on hospital organization and management.

To those of us who can look back thirty or forty years or more, there is no special achievement so wonderful as the development in this field, which has called into its service every advance in civilization and science, and includes not only the strictly professional aspects of the treatment of disease but also the social and economic aspects. Even more, the hospital of today not only has come to be regarded as a place where disease is treated and cured, but is rapidly becoming associated as the proper center of community health and as a focus from which the people may obtain correct information regarding the prevention of disease.

The multiplicity of services and of fields of endeavor in a modern, efficiently equipped and staffed hospital are so great that hospital organization and management has become a serious problem. The administrator of an important hospital is a general commanding an army; experience, knowledge, tact, courtesy, ability and judgment are required of him.

It is fortunate for those who have to do with the administration of hospitals that Dr. MacEachern has committed his experience in this regard to writing, as there is perhaps today no one better qualified or no more capable living exponent of the subject. As Director of Hospital Activities of the American College of Surgeons, Dr. MacEachern has for twenty-two years been most intimately associated with the management of every angle of hospital management both here and abroad. He is, therefore, singularly fitted for the task which he has undertaken, and his textbook on "Hospital Organization and Management" must be considered in every way as authoritative. The volume covers the history of hospitals, the steps to be taken in promoting, building and organizing new hospitals, as well as all the details of the nursing, dietary, outdoor, social service, recording and all other service departments of a functioning hospital. The organization, coordination and supervision of every angle connected with these and all other components of the modern hospital considered as a unit are fully and practically explained in detail.

The medical, surgical and adjunct professional departments, as well as the business and ethical aspects of the hospital's work, are covered in special chapters.

To say that Dr. MacEachern has done his work excellently would be merely trite. It is hard to imagine how it could have been done better or presented in a more interesting way. It should hold the attention not only of professional workers associated with hospital practice but of those of the laity who are conscious of the intimate part played by the hospital in modern community welfare and who recognize their duty of being cognizant of everything pertaining to the hospital.

There is little doubt but that Dr. MacEachern's book will become the standard one on hospital management and organization which should be in the hands of every one who aspires to have a good working knowledge of this difficult subject. It is well arranged; the printing and format are excellent, and there is a good index. Particular attention is called to the fine illustrations, which, besides being unusual, give a particular significance to a book of this kind.

KEROHT.

Chirurgia. By Prof. Davide Giordano. Two volumes. Price, 60 lire. Pp. 510 and 420. Firenze: Bompiana, 1938.

PROF. DAVIDE GIORDANO, the eminent Italian surgeon, historian and writer, was invited by the National Syndicate of Authors to write a monograph on Italian surgery of the twentieth century, this to form part of the large encyclopedia of Italian monographs. Two volumes on this subject have appeared, comprising a review of the progress made in the science and technic of Italian surgery of the first quarter of the century. The introductory chapter presents the fundamental accomplishments of Italian surgery in the past century and the conditions favoring or opposed to its development. In the following chapters are discussed general subjects, such as physical therapy, infections, blood transfusions, analgesia and anesthesia, grafts, war surgery and tumors. Several special pages are devoted to regional surgery, and there are chapters on specialties. In the last chapter, dedicated to "the future of surgery in Italy in the twentieth century," are stated the provisions for future development.

The task of harmonizing in a running treatise a mass of studies and research so vast, with 2,000 bibliographic references, is pleasingly achieved. In spite of the comprehensiveness of the survey the author states that the work does not pretend to present the complete picture of Italian surgical history. Those conversant with the Italian language will find much valuable information in this contribution to contemporary medical literature.

THOREK.

Tactique opératoire des glandes endocrines. By G. Jeanneney and P. Foucault. Price, 65 francs. Pp. 190, with 126 illustrations. Paris: Gaston Doin & Cie, 1938.

IN the last years, surgery of the endocrine system has experienced a great upswing due to the excellent researches of Felix Mandl, Oppel, Leriche and others. This excellent work is limited to surgical intervention on the endocrine system. The special technics required in operating on these organs are fully described by the authors, who not only discuss technic but also give in detail indications for operative interventions. The arrangement of the work is commendable. Preceding each chapter there is a review of the anatomy of the endocrine gland under discussion, followed by a survey of the clinical manifestations of particular pathologic entities. Succinct operative steps are outlined. Surgery of the thyroid, parathyroid, hypophysis and other endocrine glands is thoroughly described and depicted. Surgery of the adrenal glands and the surgical attempts to remedy hypertension as outlined by Mandl and others are included in the work. The technic of transplantation of testicular and ovarian gland tissue is also included. The endocrine function of the breast, the pancreas, spleen and thymus, as well as all other endocrine glands, are embraced in the discussion. Modern surgeons interested in advancement will find this work informative. There are a comprehensive bibliography and a subject index.

H.

The Medical Staff in the Hospital. By Thomas Ritchie Ponton, B.A., M.D. Price, $2.50. Pp. 288, with 6 charts. Chicago, Physicians Record Company, 1939.

PONTON is no stranger to the interesting problems of hospital administration and to the literature pertaining to hospitals and correlated activities. He is also the author of "Alphabetical Nomenclature of Diseases and Operations." He set out in this volume to write an authoritative work on the medical staff in the hospital, and he has admirably succeeded in his task. The work is divided into nine chapters. The first deals with the governing body, the second with the physicians and the hospital, the third with the selection and appointment of the medical staff, the fourth with organization of the medical staff, the fifth with by-laws of the medical staff, the sixth with meetings of the medical staff, the seventh with the medical staff and medical records, the eighth with professional accounts and the ninth with the resident medical staff. Thus every phase of the subject under discussion is embraced. Each chapter is subdivided into numerous subheadings and arranged in a readable and instructive manner. The work includes addenda and a thorough bibliography. It is timely and should be in the possession of every hospital administrator, executive and staff member. It will prove invaluable as a guide and reference book.

M. T.

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